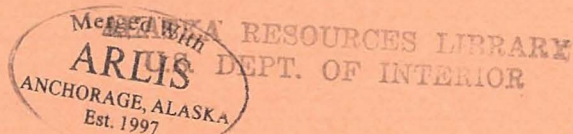


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NPR-A WELL SITES

Jack Mellor
Pat Reynolds
Bill Clithero

SEPTEMBER 1978

Bureau of Land Management NPR-A



United States Department of the Interior

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BUREAU OF LAND MANAGEMENT

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MEMORANDUM

To: Max Brewer, Chief, ONPRA
U. S. Geological Survey

From: John F. Santora, NPR-A Project Manager
Bureau of Land Management

Subject: Environmental Data Report/Per Draft Annual Plan FY 78-79

Enclosed for use in EA preparation is a report detailing the environmental data collected by the BLM for FY 78-79 exploration areas of operation.

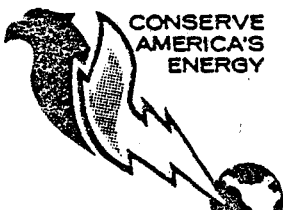
An appendix to this report will be made concerning as yet unofficial changes and modifications to the Draft Annual Plan dated July 15, 1978.

Enclosure

cc: SD (930)

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SEPTEMBER 1978

Bureau of Land Management NPR-A

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I BACKGROUND

The following information is submitted in an effort to assist the U. S. Geological Survey (USGS) in producing Environmental Assessment Reports (EAR's) and The Annual Plan of Operations (PO) for the National Petroleum Reserve in Alaska (NPR-A). An effort has been made to condense information and to provide data pertinent to EAR/PO preparation. Additional environmental information and methods for data collection are available from Bureau of Land Management (BLM) NPR-A offices in Fairbanks.

The Draft Annual Plan of Operations (DPO) for the 1978-79 season has been used as the guideline for summer assessment studies and for preparation of the assessment information and comments provided herein. Additional guidance from USGS Anchorage has been helpful in setting priorities for assessment detail needed for specific sites being excluded from the PO or for which there are particular problems.

The sites addressed include:

- Lisburne Test Well No. 1
- Seabee Test Well No. 1
- Peard Test Well No. 1
- Tap (Tapkaluk) Test Well No. 1
- J.W. Dalton Test Well No. 1
- Carbon Test Well No. 1 (Pad Only)
- Kungok Test Well No. 1 (Pad Only)
- Kigalik Test Well No. 1 (Alternate Pad Only)
- Etivluk Test Well No. 1 (Alternate Pad Only)

The greatest field effort for aquatic and mammal studies was expended on those sites planned for drilling in 1978-79. Secondary emphasis was given to those sites for which only pad construction was planned. Due to the short time frame for summer field work, expeditious use of transportation to sites was mandatory. Husky helicopters were in short supply. An acceptable alternative was an OAS Cessna 185 on floats furnished by BLM. This aircraft provided a good platform for assessing sites with large lakes, but precluded detailed work at sites with small water sources. Husky helicopters were used on a space available basis to support some work out of the Lisburne and Dalton sites.

II RESULTS

Information on individual well sites is presented on land use, mammal studies, and studies of aquatic systems. Copies of archaeological

clearances for individual sites have already been provided to the USGS office.

Table 1 summarizes physical data and fish sampling efforts on all water bodies studied. A figure accompanies each well site with numbers adjacent to water bodies with proposed usage. These same numbers are used within the text and Table 1 to help identify the lakes being discussed. Table 2 enumerates fish species collected at water sites and winter ice air strips. No threatened or endangered fish species are known to be present in NPR-A.

LISBURNE TEST WELL

A. LAND USE

Lisburne Drilling Site - NE $\frac{1}{4}$ Sec. 13, T. 11 S., R. 17 W., Umat Meridian, protracted

This well site is located on public lands approximately four (4) miles west of the boundary between NPR-A and lands conveyed to the Arctic Slope Regional Corporation at the eastern boundary of the Reserve. It lies outside of and approximately nine miles (9) southeast of the designated Colville River Special Area.

No known subsistence camps, cabins or trap lines exist within this area of operations but an on-the-ground examination should be made to verify their non-existence. No native allotment applications were filed for lands in the general area.

B. MAMMALS

Table 3 lists mammal species observed in the vicinity of the proposed well site, borrow pits, water sources and airstrips during aerial and ground surveys made on August 1, August 12 and August 14. Other species have been observed in adjacent areas or are found in habitats similar to those near the Lisburne well site (Bee and Hall, 1956).

The valley in which the well site is located contains good grizzly bear habitat including areas suitable for denning. At least seven (7) individual bears, including sows with young, were observed by BLM archaeologist Mike Kunz during the summer. Grizzly bears are the mammals most likely

TABLE 1

Well Site Water Source & Specified Use	1978 Date Sampled	Fish Caught Yes No NS*	Gross Approximation of Water Area (Acres) at 0-8 Feet Depth					Maximum Water Depth Feet	μmhos/cm Specific Conductance	
			Surface	2 ft	4 ft	6 ft	8 ft			
			0 ft	2 ft	4 ft	6 ft	8 ft			
Lisburne										
1. Lake (Proposed Water)	14 Aug	NS	8	?	?	?	0	6.5***	41	
2. Lake (Possible Water)	14 Aug	NS	16	?	?	?	0	6.0***	78	
3. Lake (Proposed Otter Strip)	14 Aug	No	23	?	?	?	0	6.0***	39	
4. Iteriak Creek (Water)	14 Aug	Yes	N/A	N/A	N/A	N/A	N/A	9.0	NS	
Seabee										
1. Umiat Lake (Water)	13 Aug	NS	48	26	8	3	0.5	8.0	97	
2. Lake (Possible Water)	3 Aug	No	9	7	6	2	0	7.0	130	
3. Lake (Possible Water)	3 Aug	NS	11	0.2	0	0	0	2.0	360	
Peard										
Kugrua River	7 Aug	Yes	N/A	N/A	N/A	N/A	N/A	22.5	26,500	
1. Lake (Proposed Herc Strip)	6 Aug	NS	235	175.9	0	0	0	3.0	138	
2. Lake (Possible Otter Strip)	6 Aug	NS	66	41.4	0	0	0	2.5	NS	
3. Lake (Possible Water)	NV	NS	38	?	0	0	0	Shallow NV	NV**	
Tap										
1. Ikroavik Lake (Water)	5 Aug	Yes	1287	1220	1112	907	0	7.0	178	
2. Lake (Herc Strip)	5 Aug	NS	239	170	0	0	0	2.5	259	
3. E. Twin Lake (Alt. Strip)	5 Aug	NS	335	188	0	0	0	3.0	410	
4. W. Twin Lake	21 Aug	NS	320	310	0	0	0	4.0	500	
5. Barrier Island Pond	15 Aug	NS	< 1	0	0	0	0	0.5	31,000	
JW Dalton										
1. Lake (Possible Water)	1 Aug	No	52	26	0	0	0	2.0	10,400	
2. Lake (Possible Water)	NV	NS	53	?	0	0	0	Shallow NV	NV	
3. Smith River (Summer Water)	2 Aug	Yes	N/A	N/A	N/A	N/A	N/A	7.0	34,500	
Carbon										
1. Lake (Prop. Otter S. & Water)	14 Aug	No	29	23	20	13	5	10.0	188	
2. Lake (Possible Water Source)	NV	NS	7	?	0	0	0	5.0***	NV	
Kigalik										
1. Lake (Prop. Otter S. & Water)	NV	NS	13	?	?	0	0	4.0***	NV	
2. Lake (Potential Water)	NV	NS	≈ 6	?	?	?	?	8.0***	NV	
3. Lake (Potential Water)	NV	NS	≈ 6	?	?	0	0	5.0***	NV	
Etiviluk										
1. Lake (Possible Water)	12 Aug	NS	192	182	141	0.2	0	6.0	32	
2. Betty Lake (Herc Strip)	12 Aug	Yes	348	328	296	228	151	20.0	38	

*NS = Not Sampled

**NV = Not Visited

***Measured by Bell Herring & Associates

TABLE 2 FISH COLLECTED AT PROPOSED WELL
SITES DURING AUGUST 1978

<u>Well Site</u>	<u>Sampled Source</u>	<u>No</u>	<u>Species</u>
Lisburne	Iteriak Creek	2	Grayling <u>Thymallus arcticus</u>
Peard	Kugrua River	71	Pink Salmon <u>Oncardynchus gorbuscha</u>
		2	Chum Salmon <u>Oncorhynchus leeta</u>
		11	Least Cisco <u>Coregonus sardinella</u>
		1	Sculpin Unknown Species
Tapkaluk	Ikroavik Lake	7	Least Cisco <u>Coregonus sardinella</u>
		2	Nine Spined Stickleback <u>Pungitius pungitius</u>
J. W. Dalton	Smith River	3	Arctic Char <u>Salvelinus alpinus</u>
		15	Least Cisco <u>Coregonus sardinella</u>

TABLE 3 MAMMALS PRESENT IN THE VICINITY
OF THE LISBURN TEST WELL SITE

MAMMAL SPECIES OBSERVED

Arctic Ground Squirrel	<u>Spermophilus parryi</u>
Red Fox*	<u>Vulpes vulpes</u>
Grizzly Bear	<u>Ursus Aretos</u>
Wolverine*	<u>Gulo gulo</u>
Moose	<u>Alces alces</u>
Caribou	<u>Rangifer tarandus</u>

OTHER MAMMAL SPECIES PROBABLY PRESENT

Masked Shrew	<u>Sorex cinereus</u>
Arctic Shrew	<u>Sorex arcticus</u>
Dusky Shrew	<u>Sorex obseurus</u>
Collared Lemming	<u>Dicrostonyx torquatus</u>
Brown Lemming	<u>Lemus trimucronatus</u>
Red Backed Vole	<u>Clethrionomys rutilus</u>
Tundra Vole	<u>Microtus oeconomus</u>
Singing Vole	<u>Microtus gregalis</u>
Arctic Fox	<u>Alopex lagopus</u>
Gray Wolf	<u>Canis lupus</u>
Least Weasel	<u>Mustela erminea</u>
Ermine	<u>Mustela nivalis</u>

* observed by BLM archaeologist Mike Kunz

to be disturbed by aircraft noise according to McCourt, et. al (1974). Bears utilizing the well site vicinity as a portion of their home range may be displaced by noise associated with exploration activities. Denning bears may also be vulnerable to disturbance by noise. Surveys in late September or early October will attempt to locate bears denning in the vicinity of the well or along proposed winter roads. Activities could then be routed away from known dens to avoid potential disturbance.

Carnivores, particularly foxes, and bears during the summer months, may be attracted to the drilling camps by food odors. Careful handling of food wastes and adherence to regulations prohibiting the feeding of wild animals should minimize human-animal interactions.

Large numbers of caribou utilize the area as summer range. More than 1500 caribou were observed in the vicinity of the well site on August 1, 1978, and BLM archaeologist Mike Kuntz reported seeing 6000-7000 caribou the following day. Numerous caribou trails are also visible in the Lake Betty area indicating the importance of this region as a migration route. Year round drilling activities, particularly noise associated with aircraft, may cause displacement of large numbers of individuals into adjacent areas. Cows with calves are particularly vulnerable to disturbance (Cameron & Whitten, 1977).

Moose which utilize this valley during summer months may also be affected by noise associated with a year round drilling program. As suitable habitat is more limited, these animals may move some distance if they are disturbed.

There are no fox or bear dens located at borrow sites or the well site. Small numbers of ground squirrels, shrews, weasels, and microtine rodents will be killed or displaced at these sites by gravel removal or well drilling activities. Effects on total population numbers will be minimal.

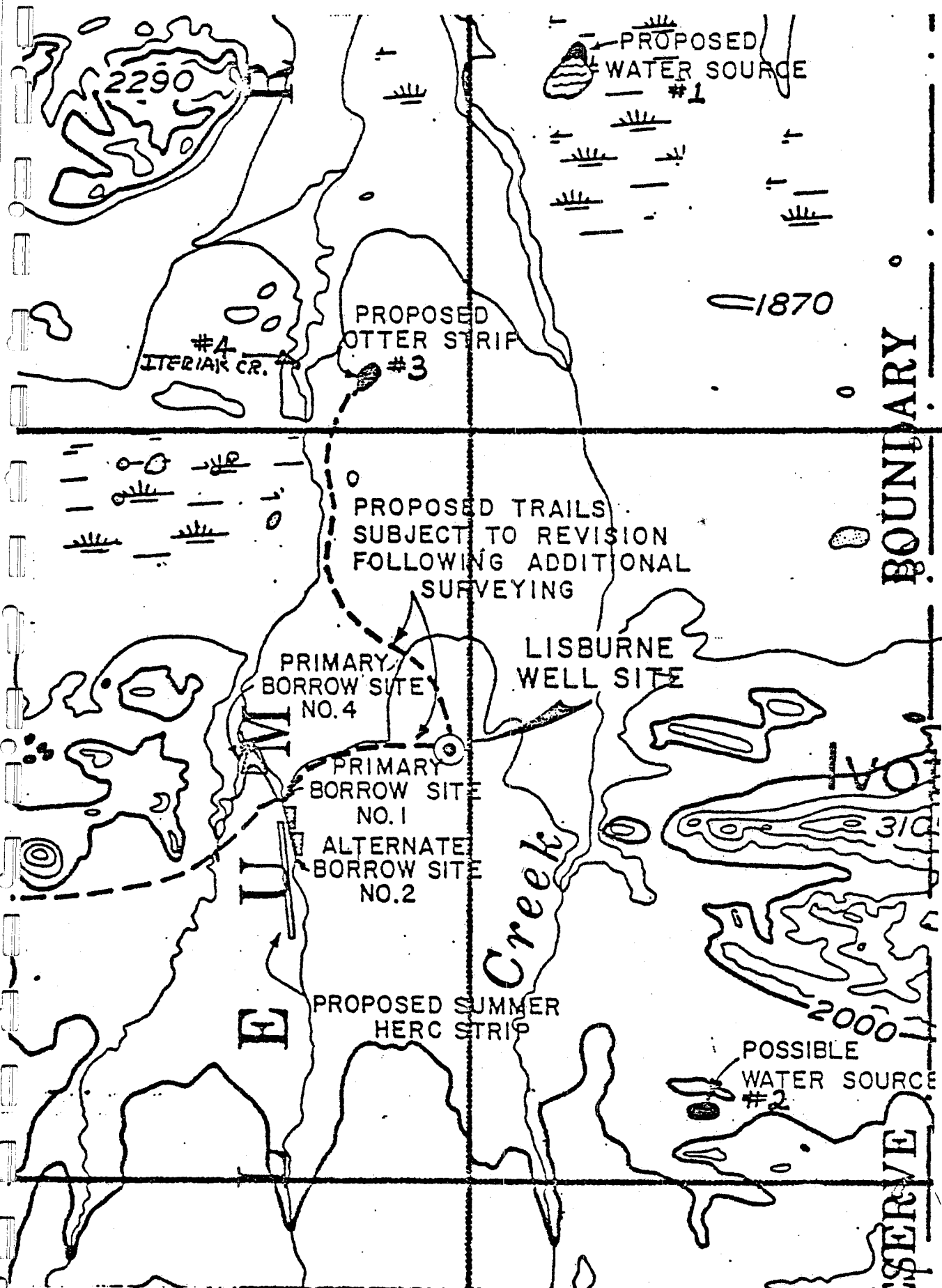
C. AQUATICS

The DPO identified water bodies for the Lisburne site are shown in Figure #1. Figures 2, 3, and 4 show shorelines of these identified water sources as taken from 1977 aerial photographs.

#1 Proposed Water Source

This lake (Figure 2) is for the most part a drained lake basin appearing much different in actual size from what is indicated on the charts.

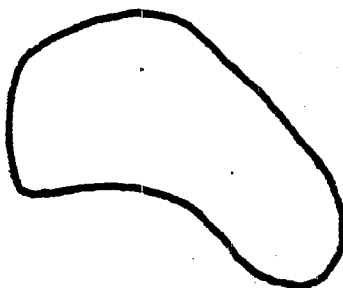
GRAPHIC SCALE — MILES



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 2 LAKE IDENTITY: Lisburne #1, proposed water source

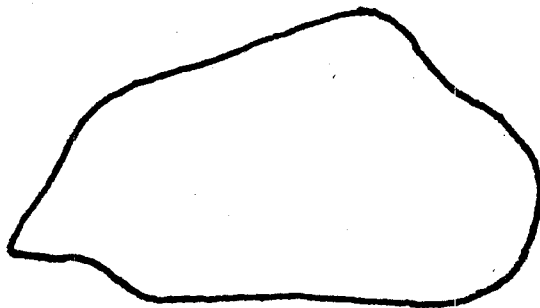
Lat. 63° 34.0' Long. 155° 34.0' Survey Date: no transects Scale: 1:6000
Bell Herring depth 6.5 feet



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 3 LAKE IDENTITY: Lisburne #2, possible water source

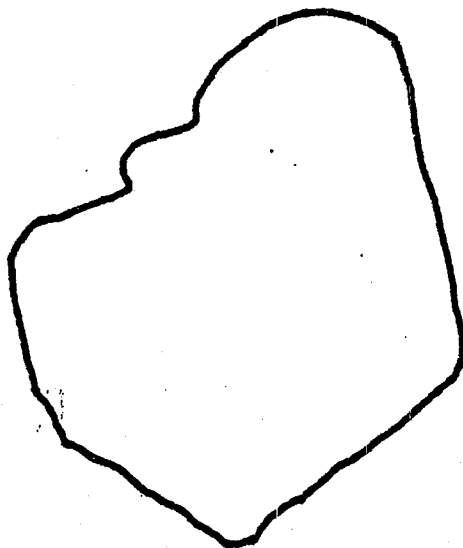
Lat. 68° 26.3' Long. 155° 40.0' Survey Date: no transects Scale: 1:6000
Bell Herring depth 6.0 feet



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 4 LAKE IDENTITY: Lisburne #3, proposed Otter strip

Lat. 68° 31.9' Long. 155° 46.7' Survey Date: no transects Scale: 1:6000
Bell Herring depth 6.0 feet



Only eight (8) acres of water surface area remain at the northern end of the original basin (Table 1). The northeast and southwest shores have six (6) foot high slumping banks. Specific conductance of the water is 41 umhos/cm. Bell Herring measured a water depth of 6.5 feet. This lake is very small and, as it probably freezes to the bottom by mid-winter, it most likely does not contain a significant fish population. Utilization of this lake as a water source should have little impact, but water quantity is severely limited.

#2 Possible Water Source

This lake has only 16 acres of surface area and a water depth of 6.0 feet as measured by Bell Herring (Table 1). The lake's water shed is very small with evidence of little to no channel in or out flow. Lake level recovery from a drastic reduction in water volume may be slow. The lake shore is low and gently sloping. No significant bank slumping is occurring. Shallow margins along the southern shoreline have some emergent and submerged vegetation while the north eastern side has rock rubble. Specific conductance of the water was 78 umhos/cm. The lake probably freezes to the bottom and most likely contains no significant fish populations. Utilization of this lake as a water source should have little impact, but water quantity is limited.

#3 Proposed Otter Strip

This is the largest of lake basins (23 acres) identified for the Lisburne site (Table 1). Its outlet is a beaded stream which flows into Iteriak Creek. A small but observable flow existed in the inlet on August 14, 1978. Specific conductance of water was 39 umhos/cm. Up to nine (9) feet of slumping banks occur on the north and southeastern lake shorelines. Bell Herring measured water depth at 6.0 feet. No fish were found during a seine haul up 50 feet of the inlet on the northern end of the lake. This lake may freeze to the bottom by mid-winter. It probably does not contain any significant fish populations and will not be impacted if used as a winter airstrip or water source, but water quantity is limited.

#4 Iteriak Creek

A grayling fishery exists in the creek. Two grayling were caught by angling for one-half hour. Some deep holes (9 feet) were noted along the bluffs. Fish may over-winter in these deep pools and probably spawn in this creek.

If the creek bed is utilized as a borrow site, care must be taken not to impede water flow nor cause generation of suspended sediment loads that could be detrimental to the fishery.

Iteriak Creek has been proposed as a summer water supply. Stream flow rate and water use requirements should be calculated prior to using this stream as a water source to insure that excessive water is not removed from the stream.

#5 Betty Lake Proposed Winter Herc Strip

Betty was the deepest (20 feet) lake assessed. It has good volumes of water available beyond the depth of freeze (Table 1). Figure 28 shows that the deepest part of the lake basin occurs along the mid-western side. There may be a continuous shoal (5-6 feet) between the small northern and large southern basin. This shoal separates the inlets from the single outlet at the northern end and is at a depth which may allow ice to separate the two basins during mid-winter. Should snow be cleared across the entire shoal area, the blockage between these basins could be accentuated.

Lake Betty contains lake trout (Salvelinus namaycush), arctic grayling (Thymallus arcticus), and broad whitefish (Coregonus nasus) (ADF&G, 1977). Large fish, probably grayling, were observed in the outlet of Lake Betty in August 1978.

The lake contains spawning habitat and the outlet is probably utilized by grayling for spawning and rearing (ADF&G, 1977).

Using this lake as a winter ice strip should have no effect on fish populations unless fish are trapped within limited basins. Also fueling handling and refueling operations must be managed in such a way as to avoid spills on lake ice (see general comments).

SEABEE TEST WELL

A. LAND USE

Seabee Drilling Site - SE¼ Sec. 5, T. 1 N., R. 1 W., Umiat Meridian, protracted

The proposed well site is located approximately one-half (½) mile north of the boundary of the state owned tract at Umiat. This 1450 acre tract of land was conveyed to the State of Alaska by Deed, effective June 1,

1966. Both surface and subsurface estates were conveyed, excepting for oil and gas, and certain easements were reserved to the United States.

The primary borrow site, possible water source and proposed gravel road are located on public lands. The alternate borrow site, located in Section 2 (SW $\frac{1}{4}$) within the streambed of the Colville River lies within an area of concern as to the correct boundary of the NPR-A and is presently in litigation as to ownership - i.e. State or Federal. The existing airport facility at Umiat is under the jurisdiction of the State of Alaska.

The entire proposed drilling site and ancillary projects lie within the designated Colville River Special Area, set aside for the protection of the endangered Peregrine Falcon.

Locations of any possible subsistence camps, cabins or trap lines must be determined through and on-the-ground examination. None are known at this time. Josephine Auffencamp filed a native allotment application (F-16289) for 160 acres between Umiat Lake and Bearpaw Creek (Section 2, T. 1 S., R. 1 W., Umiat Meridian), $\frac{1}{4}$ mile north of alternate borrow site and 2 $\frac{1}{2}$ miles east of the well site. The application has been rejected, however the parcel may be currently used for subsistence purposes.

B. MAMMALS

Table 4 lists mammal species observed in vicinity of the Seabee well site during aerial and ground surveys made August 3, 1978 and August 12, 1978 and April 1976. Other mammals are reported as occurring near the site at Umiat (Bee and Hall, 1956).

This area contains good habitat for moose. One of the largest moose populations in the arctic is located along the Colville River. Nineteen cow moose were collared in the vicinity of Umiat in October 1975 (Mould, 1977). Carnivores, including foxes, wolverine and grizzly bears, are also present along this portion of the Colville River.

Mammal species in vicinity of the Seabee well site have been subjected to disturbance from aircraft and other human activities at Umiat for several years. The additional aircraft required to support the Seabee drilling program may cause disturbance to some individuals, but most animals probably have habituated to aircraft noise.

There are no fox dens or bear dens located at borrow sites of the well site. Some small mammals including arctic ground squirrels, microtine

TABLE 4 MAMMALS PRESENT IN THE VICINITY
OF THE SEABEE TEST WELL SITE

Mammal Species Observed

Masked Shrew*	<u>Sorex cinereus</u>
Arctic Ground Squirrel	<u>Spermophilus parryii</u>
Brown Lemming*	<u>Lemus trimucronatus</u>
Tundra Vole*	<u>Microtus oeconomus</u>
Wolf*	<u>Canis lupus</u>
Red Fox*	<u>Vulpes vulpes</u>
Grizzly Bear	<u>Ursus arctos</u> *
Wolverine*	<u>Gulo gulo</u>
Moose*	<u>Alces alces</u>
Caribou	<u>Rangifer tarandus</u>

Other Mammal Species Probably Present

Arctic Shrew	<u>Sorex arcticus</u>
Collared Lemming	<u>Dicrostonyx torquatus</u>
Red Backed Vole	<u>Clethrionomys rutilus</u>
Singing Vole	<u>Microtus gregalis</u>
Arctic Fox	<u>Alopex lagopus</u>
Ermine	<u>Mustela erminea</u>
Least Weasel	<u>Mustela nivalis</u>
Lynx	<u>Lynx canadensis</u>

*Observed and/or trapped April 1976

rodents, weasels and shrews may be killed or displaced during gravel removal and drilling operations. Effects on total population numbers will be minimal.

C. AQUATIC SYSTEMS

The DPO identified water sources area shown in Figure 5. Figures 6, 7, and 8 show shorelines scaled from charts and two foot depth contours approximated from fathometer transects.

#1. Umiat Lake Proposed Water Source

Umiat Lake is eight (8) feet deep, but has very few acre feet of water at any appreciable depth (Table 1). A considerable quantity of benthic algae and submerged aquatic vegetation exist in this lake. This vegetation may be masking greater water depths that exist or have existed within this lake basin. Unfortunately shoals appear to separate the deeper holes within this oxbow lake. Intake locations for winter water withdrawal might best be chosen from Figure 6 which depicts best educated guesses at lake depth contours from a single fathometer transect. Specific conductance of the water was 97 umhos/cm.

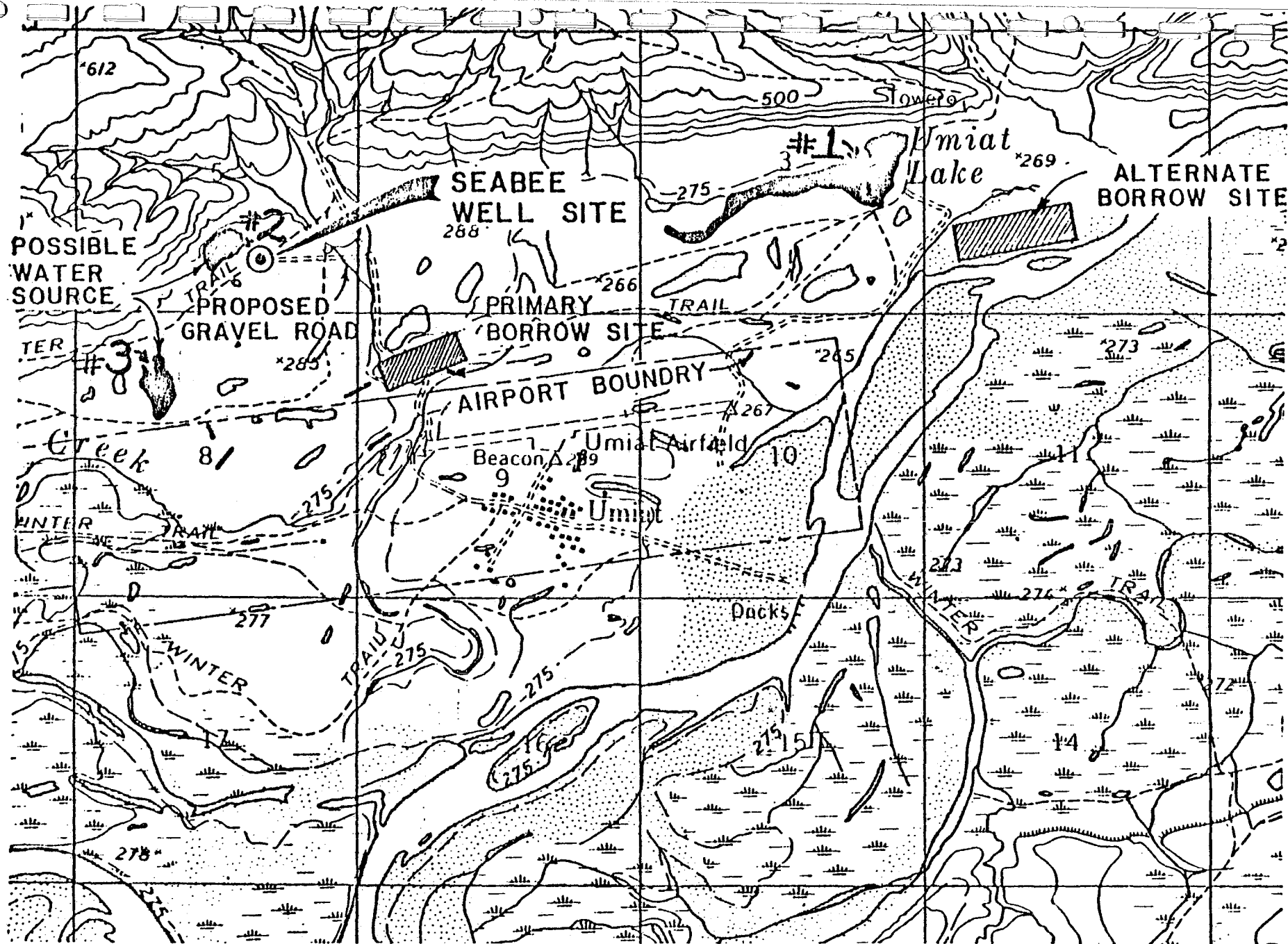
The impact will be minimal if this lake is used as a water source.

#2. Possible Water Source

This lake is nearest and most convenient to the well site. It has a maximum recorded depth of seven feet. Figure 7 shows the two foot contours estimated from 5 each fathometer transects. The approximate areas at these contoured depths are in Table 1.

This lake appears to have almost as much water below 4 feet as Umiat Lake and is much closer to the well site. It also has a considerable amount of erect aquatic vegetation. Specific conductance of the water was 130 umhos/cm.

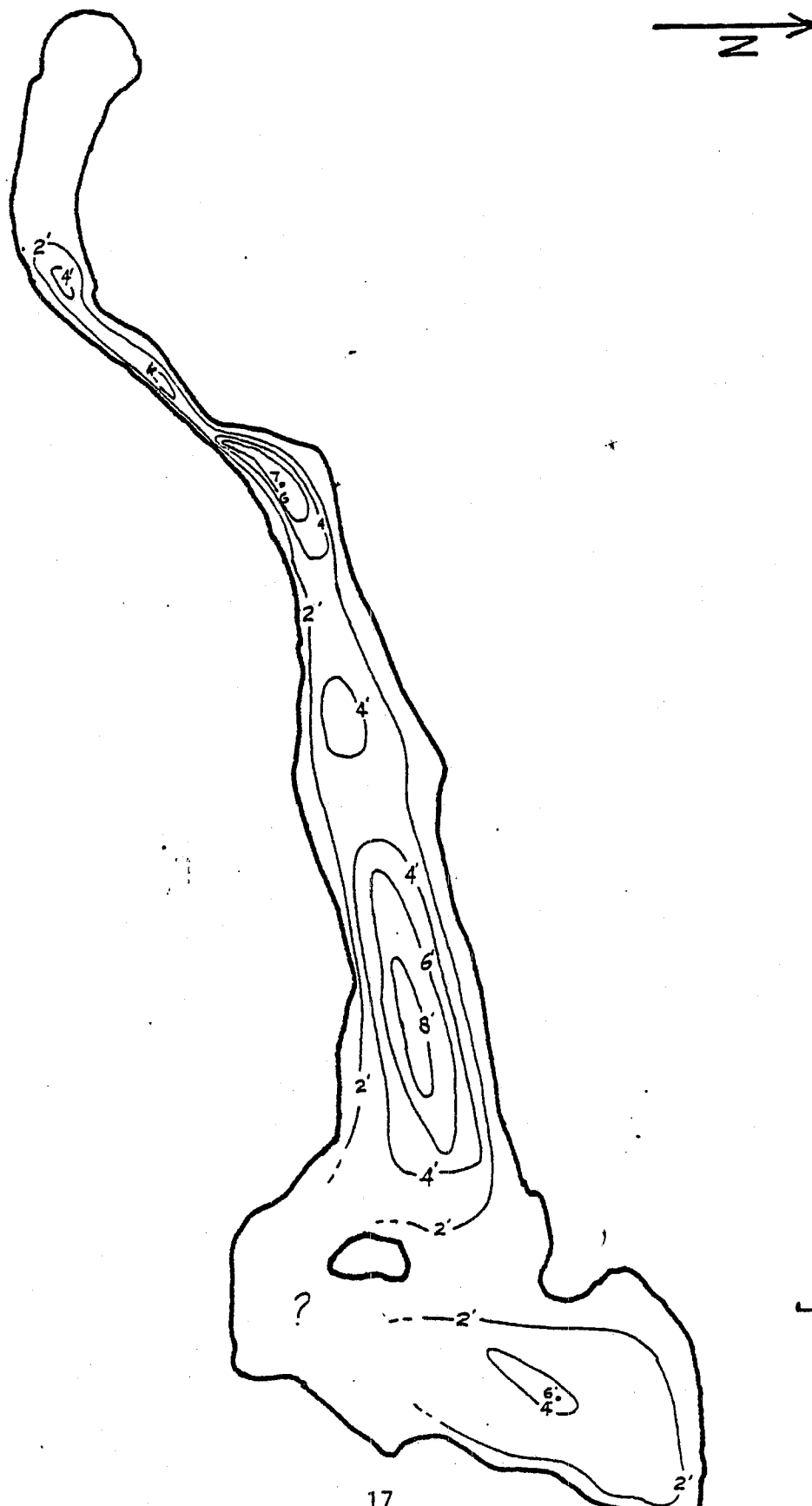
A seining effort on the northern end of this lake on August 3, 1978, yielded no fish. Impact will be minimal if this lake is used as a water source.



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 6 LAKE IDENTITY: Seabee #1 (Umiat Lake), water source

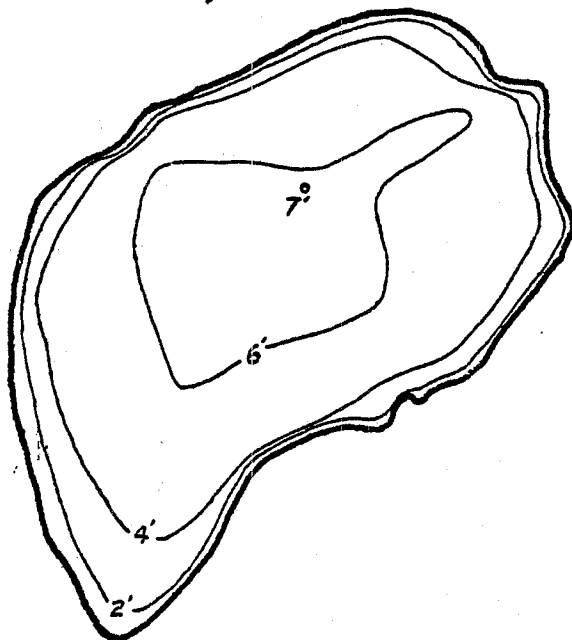
Lat. 69° 23.0' Long. 152° 6.0' Survey Date: 13 Aug 78 Scale: 1:6336
from chart



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 7 LAKE IDENTITY: Seabee #2, possible water

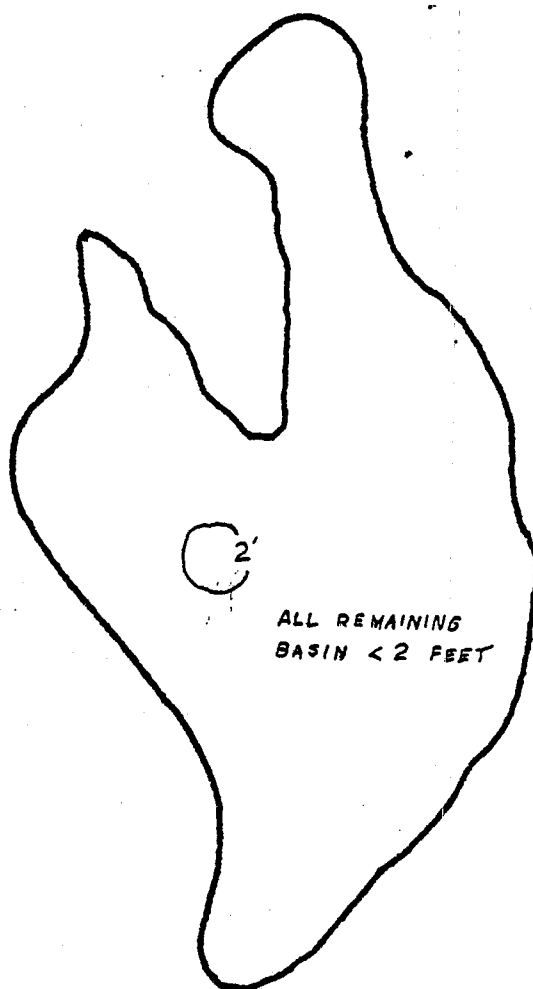
Lat. 69° 22.8' Long. 152° 11.1' Survey Date: 3 Aug 78 Scale: 1:3168



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 8 LAKE IDENTITY: Seabee #3, possible water

Lat. 69° 22.4' Long. 152° 11.6' Survey Date: 3 Aug 78 Scale: 1:3168



#3. Possible Water Source

This lake is south west of the well site and is only about 2 feet deep. Figure #8 shows the shoreline and 2 foot contour. Table 1 shows area of water at depth.

The water's specific conductance was 360 umhos/cm. This lake is too shallow to contain any fish. As it will freeze to the bottom fairly early in winter, it is also unsuitable as a winter water source.

PEARD TEST WELL SITE

A. LAND USE

Peard Drilling Site - NW $\frac{1}{4}$ Sec. 25, T. 16 N., R. 28 W., Umiat Meridian, protracted

This site is located entirely on public lands, approximately fourteen (14) miles east of the boundary of lands conveyed to the Olgoonik Corporation (Wainwright). It is not within the boundaries of any designated Special Area.

There are native subsistence camps and traplines in the general area but an on-the-ground examination would be necessary to determine site specific locations in relation to the proposed sites and trails. No native allotment applications were filed for lands in the general area.

B. MAMMALS

Table 5 lists terrestrial mammals observed or collected in the vicinity of the Peard Well Site, water sources, and borrow pits during ground and aerial surveys between August 6 and August 10, 1978. Other species listed have been observed in adjacent areas or are reported in habitats similar to those found near the Peard well site (Bee and Hall, 1956).

The area in which this site is located is an overwintering area for caribou. Over 600 caribou were observed between Peard Bay, Icy Cape and Meade River on April 14, 1978; 64 caribou were in vicinity of the well site on April 17, 1978. Winter drilling activities, particularly noise associated with aircraft, may cause displacement of caribou utilizing habitat in the vicinity of the well site.

There are no fox dens located at borrow sites or the well site. An arctic fox den, with nine (9) pups, was found about five (5) miles southwest of the well site near the Kugrua River.

TABLE 5 TERRESTRIAL MAMMALS PRESENT IN THE
VICINITY OF THE PEARD TEST WELL SITE

Terrestrial Mammal Species Observed

Masked Shrew	<u>Sorex cinereous</u>
Arctic Ground Squirrel	<u>Spermophilus parryi</u>
Brown Lemming	<u>Lemus trimucronatus</u>
Wolf*	<u>Canis lupus</u>
Arctic Fox	<u>Alopex lagopus</u>
Caribou	<u>Rangifer tarandus</u>

Other Terrestrial Mammals Probably Present

Collared Lemming	<u>Dicrostonyx torquatus</u>
Tundra Vole	<u>Microtus oeconomus</u>
Red Fox	<u>Vulpes vulpes</u>
Ermine	<u>Mustella erminea</u>
Wolverine	<u>Gulo gulo</u>

* Scats

Some small mammals, including ground squirrels, shrews and microtine rodents will be killed or displaced during construction and drilling activities. Loss of these individuals should not effect total population numbers.

Marine mammal species found in waters adjacent to the Peard Well Site are listed in table 6. A ring seal was observed in the Kugrua River about five (5) miles upstream from Kugrua Bay on August 9, 1978. Ten to fifteen whales, probably gray whales, were seen off-shore of Peard Bay on August 16, 1978. Numerous walrus carcasses were observed on beaches between Wainwright and Barrow on August 16, 1978.

Female polar bears den from October until April in drifting pack ice, land-fast ice or on land within 20 miles of the coast (Benfield, 1977). Activities associated with winter drilling, particularly aircraft, could disturb bears denning near the shore adjacent to the well site. If any den is located, traffic should be routed around the area to avoid potential disturbance.

Five (5) species of whales occuring in the coastal waters adjacent to the Peard Bay site are classified as endangered species according to the U.S. Department of Interior (1976). The winter drilling program at the Peard site will not impact these species unless drilling extends into April or a major oil spill occurs.

Bearded and ringed seals give birth in the pack ice in April and May (ADF&G, 1973; Burns, 1970). If drilling activities extend into April, low flying aircraft may disturb parturient females. Aircraft should avoid open leads and pack ice areas during April and May to prevent potential disturbances to whales and seals.

C. AQUATIC SYSTEMS

The DPO identified water bodies are shown in Figure 9. Figures 10, 11, and 12 provide bathymetry information for each water body. Refer to Table 1 for areas of water at various depths and a synopsis of other information.

Kugrua River

The Kugrua River is esturine (specific conductance of 26,500 umhos/cm) where the outlet stream from #1 Lake enters the Kugrua River. Tidal and wind surge could change water level by as much as 18 inches. Some

TABLE 6 MARINE MAMMALS PRESENT IN COASTAL WATERS
ADJACENT TO THE PEARD TEST WELL SITE

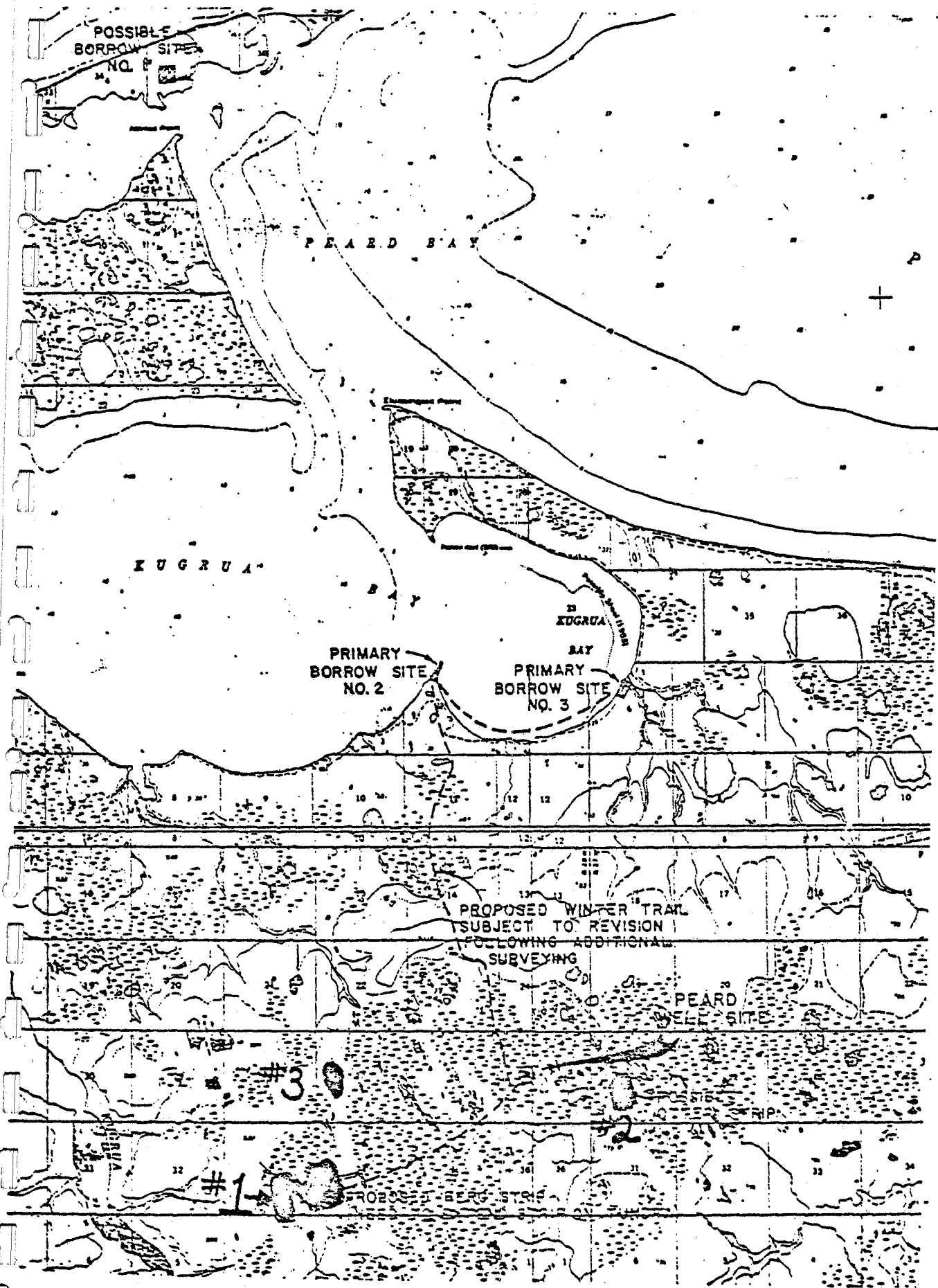
Marine Mammals Observed

Gray Whale*	<u>Eschirichtius gibbosus</u>
Pacific Walrus	<u>Odobenus rosmarus</u>
Ringed Seal	<u>Phoca hispida</u>

Marine Mammals Known To Be Present

Polar Bear	<u>Ursus maritimus</u>
Beluga	<u>Delphinapterus leucas</u>
Narwhal	<u>Monodon monoceros</u>
Killer Whale	<u>Orcinus orca</u>
Harbor Porpoise	<u>Phocoena phocoena</u>
Bowhead Whale*	<u>Balaena mysticetus</u>
Finback Whale*	<u>Balaenoptera physalus</u>
Sei Whale*	<u>Balaenoptera borealis</u>
Little Piked Whale	<u>Balaenoptera acutorostrata</u>
Humpback Whale*	<u>Megaptera novaeangliae</u>
Northern Fur Seal	<u>Collorhinus ursinus</u>
Steller Sea Lion	<u>Eumetopias jubata</u>
Harbor Seal	<u>Phoca vitulina</u>
Ribbon Seal	<u>Phoca fasciata</u>
Bearded Seal	<u>Erignathus barbatus</u>

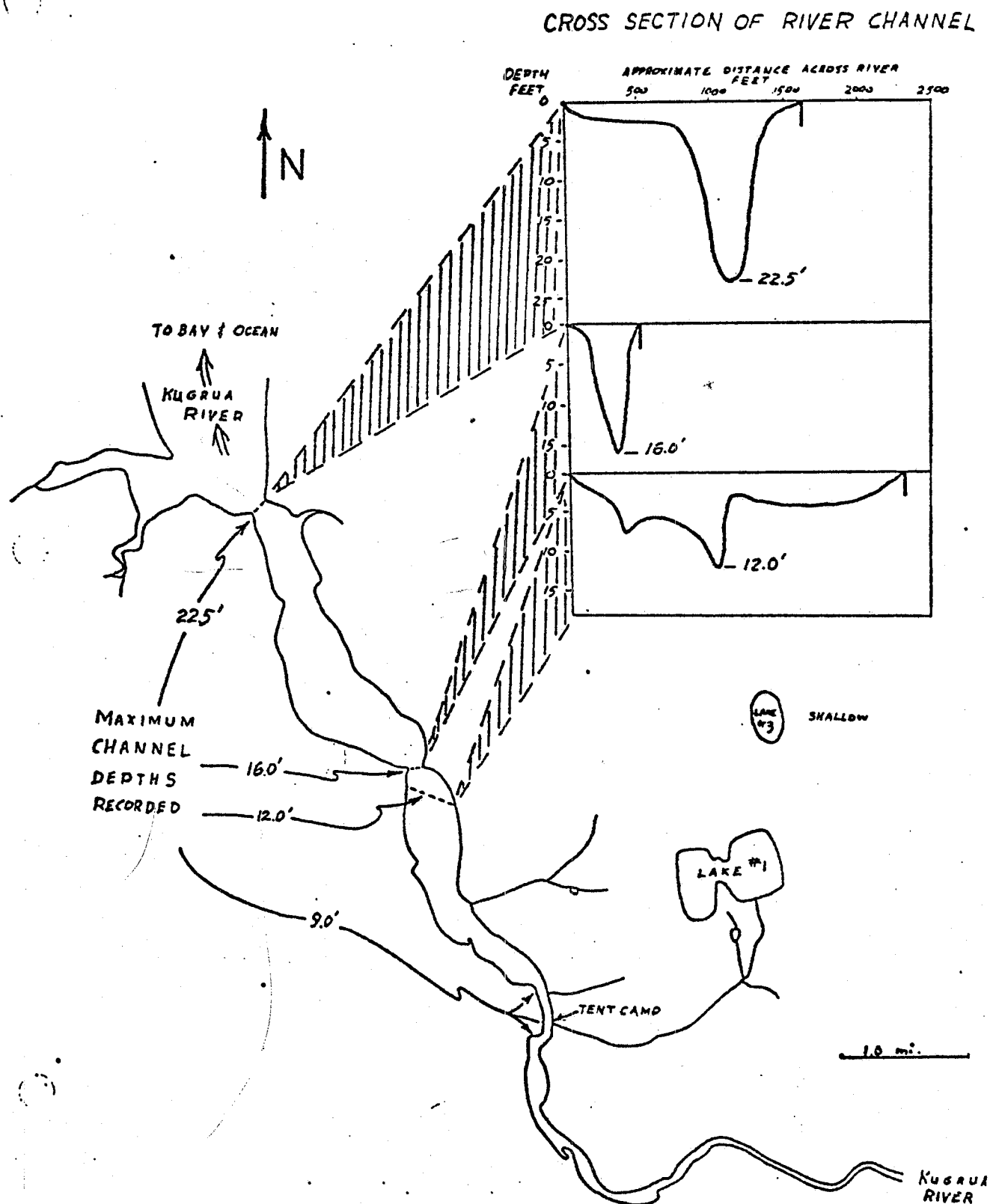
*Endangered Species



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 10 LAKE IDENTITY: Kugrua River (Transects)

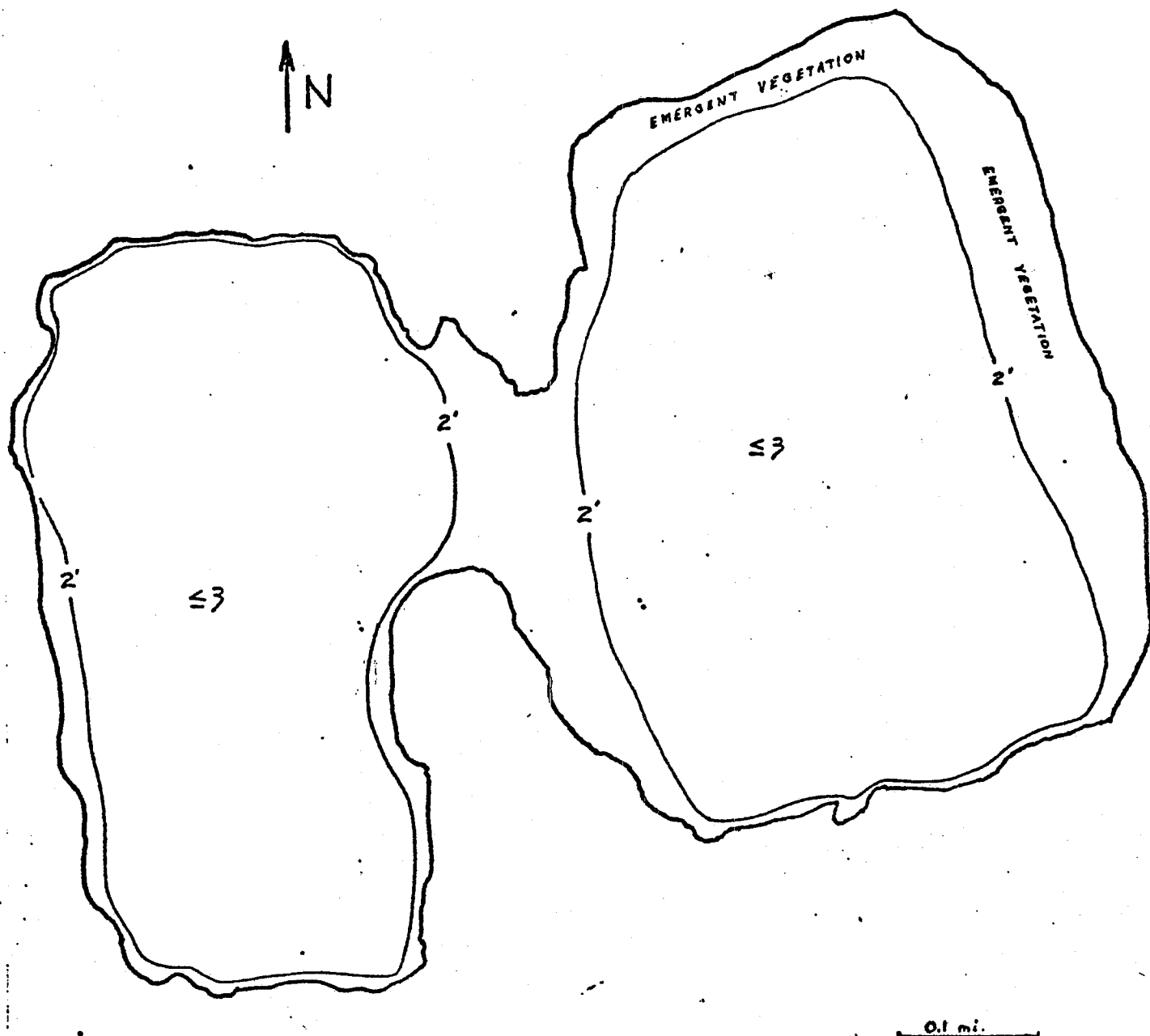
Lat. 70° 40.1' Long. 159° 11.5' Survey Date: 7 Aug 78 Scale: 1:74880



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 11 LAKE IDENTITY: Peard #1, Proposed Herc Strip

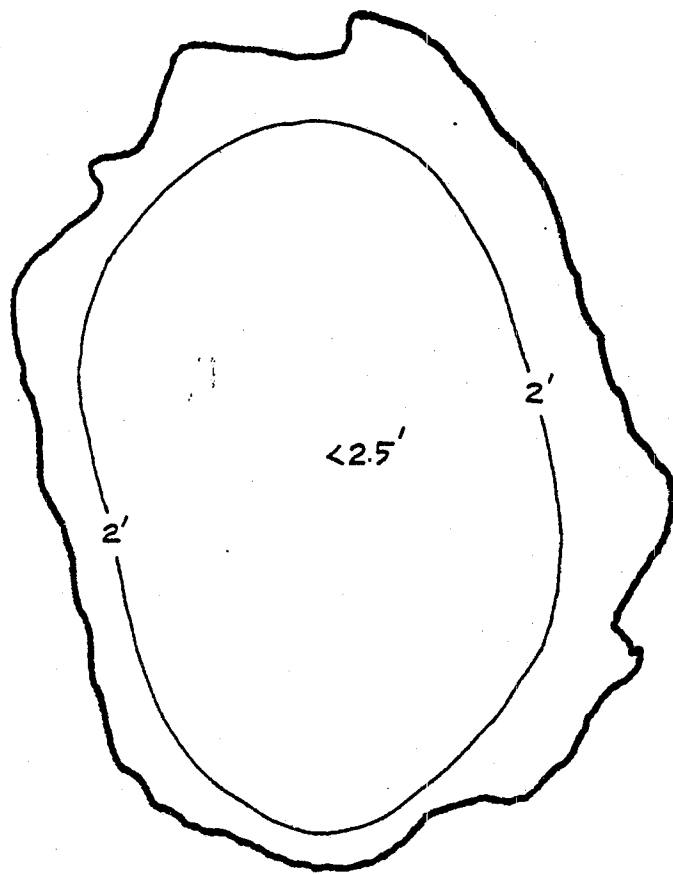
Lat. 70° 31.2' Long. 159° 06.2' Survey Date: 6 Aug 78 Scale: 1:7488



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 12 LAKE IDENTITY: Peard #2, Possible Otter Strip

Lat. 70° 42.7' Long. 153° 57.7' Survey Date: 6 Aug 78 Scale: 1:6336



0.1 mi.

selected transects across the river show channel depths (up to 22.5 feet) in Figure 10.

This river is a significant salmon spawning stream. Two chum salmon and 71 pink salmon were caught in experimental gill nets set for 24 hours. All salmon were in spawning condition. Eleven least cisco were also caught during the same sampling effort. One juvenile sculpin was captured in one of four (4) minnow traps set for 27 hours (Table 2). Chum salmon, pink salmon, 4 horned sculpin (Myoxocephalus quadricornis), slimy sculpin (Cottus cognatus) and nine spined stickleback (Pungitius pungitius) were captured on the Kugrua River during fish surveys in August 1977. (Netsch, 1977).

The river contains spawning and rearing habitat for salmon. It is also a migratory corridor for anadromous fish.

This river may be crossed by vehicles carrying equipment and supplies along the winter road south of the Peard well site. If stipulations and operations described in the Draft Annual Plan are followed, impact on this river will be minimal.

#1. Proposed Herc Strip And Water Source

This lake has a maximum depth of approximately three (3) feet and specific conductance of 138 umhos/cm (Table 1). The lake is too shallow to contain a significant fish population and no impact will occur if it is used as a C-130 airstrip in winter. This lake is not deep enough for a winter water source.

#2. Possible Otter Strip and Water Source

This lake has a maximum water depth of 2.5 feet (Table 1). This lake is too shallow to contain a significant fish population and there will be no impact if it is used as a winter airstrip. But the lake is not deep enough for a winter water source.

#3. Possible Water Source

This small lake is about 2½ miles west of the well site. It has lots of emergent vegetation and is obviously very shallow. This lake is not deep enough for a winter water source.

TAPKALUK TEST WELL

A. LAND USE

Tapkaluk Drilling Site - NW¼ Sec. 26, T. 23 N., R. 16 W., Umiat Meridian, protracted

The location for this proposed well site is on lands conveyed (surface estate, only) to the Ukpeagvik Inupiat Corporation (U.I.C.) Barrow, Alaska. In addition, portions of the proposed ice roads to the water source (Ikroavik Lake), and to the ice Herc strip (and alternate ice Herc strip at East Twin Lake) are on private lands conveyed to the U.I.C.

The proposed ice Otter strip and those portions of the ice roads across Elson Lagoon are within the jurisdiction of the NPR-A, and are not within the lands conveyed to the U.I.C.

On the ground examination will determine whether or not subsistence camps or trap lines are located on or close to the ice road routes or the drilling site, are proposed. No native allotment applications were filed for lands within the general area of operations.

B. MAMMALS

Table 7 shows terrestrial mammals observed near the proposed water sources and winter air strip sites during ground and aerial surveys on August 2, August 5, and August 15, 1978. Other mammals have been observed in the vicinity of Barrow or reportedly occur near Barrow (Bee and Hall, 1956).

A small population of caribou remains in the vicinity of Barrow year round. These animals have been subjected to the effects of human development for several years. With the exception of some individuals disturbed and displaced by aircraft noise, well drilling activities should have minimal impact on these animals.

Disturbance of other mammals at water source and airstrip sites should also be minimal. Small numbers of shrews, weasels and microtine rodents will be killed or displaced during transportation activities between the airstrip and the well site. Population numbers will not be effected significantly.

No mammals inhabit Tapkaluk Island as permanent residents. Fox scats were found near the well site on August 15, 1978. Foxes occasionally

TABLE 7 TERRESTRIAL MAMMALS PRESENT IN THE VICINITY OF
WATER SOURCES AND AIRSTRIPS TO BE USED DURING DRILLING
OPERATIONS AT THE TAPAKLUK TEST WELL SITE.

Terrestrial Mammals Observed

Brown Lemming	<u>Lemmus trimucronatus</u>
Caribou	<u>Rangifer tarandus</u>

Terrestrial Mammals Known To Occur

Masked Shrew	<u>Sorex cinereous</u>
Arctic Shrew	<u>Sorex arcticus</u>
Collared Lemming	<u>Dicrostonyx groenlandicus</u>
Red Back Vole	<u>Clethrionomys rutilus</u>
Arctic Fox	<u>Alopex lagopus</u>
Red Fox	<u>Vulpes fulva</u>
Shorttailed Weasel	<u>Mustela erminea</u>
Least Weasel	<u>Mustela rixosa</u>

visit the island after the ocean has frozen in winter but no dens exist on the island.

Table 8 shows marine mammals known to occur in coastal waters adjacent to Tapkaluk Island.

Polar bears and arctic foxes may be attracted to the well site camp by the odor of food. Careful handling of food wastes and adherence to regulations prohibiting feeding wild animals is mandatory to prevent human-animal confrontations.

Female polar bears den from October until April in drifting pack ice, land fast ice, and on land within 20 miles of the coastline (Benfield, 1977). Bears may den in the vicinity of Tapkaluk Island. If any dens are located, activities should be routed around the areas to reduce the possibility of disturbing denning bears.

Five endangered species of whales are known to occur in waters adjacent to the well site (USF&WS, 1976). Bowhead whales and gray whales are the most significant species. Impact on these species should be minimal as most of the drilling activity will take place during the winter months when these species are absent.

Bearded seals and ringed seals have been observed in Elson lagoon. Both species may give birth in the pack ice near Tapkaluk Island in April and May (ADF&G, 1978; Burns, 1970). Low flying aircraft should avoid ice pack areas and open leads during April and May to avoid disturbance to pupping seals and migrating whales.

C. AQUATIC SYSTEMS

The DPO identified water bodies are shown in Figure #13. Figures #14, #15, #16, and #17 provide bathymetry information for each water body. Refer to Table 1 for areas of water available at various water depths and a synopsis of aquatic data.

#1. Ikroavik Lake Water Source

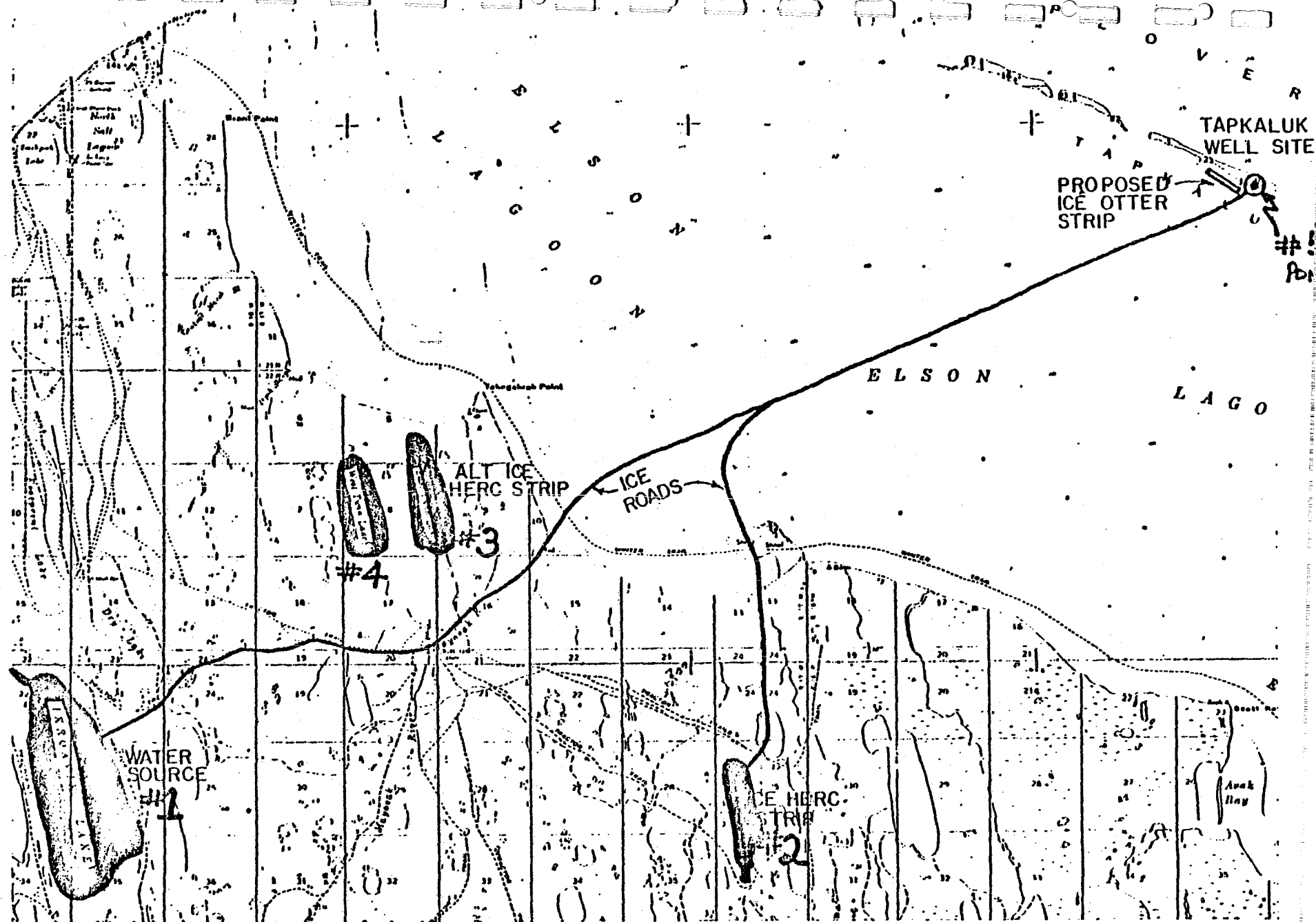
This lake is 7 feet deep and has a large body of water to draw from down to 6 feet water depth. Table 1 has calculations for areas of water available at water depth contours shown in figure #14.

This lake contains a population of least cisco, nine spined stickleback, and possibly other species (Table 2). Seven least cisco were caught in a sinking experimental gill net set for 26 hours. No fish were caught

TABLE 3 MARINE MAMMALS PRESENT IN THE
VICINITY OF TAPKALUK TEST WELL SITE

Polar Bear	<u>Ursus maritimus</u>
Beluga	<u>Delphinapterus leucas</u>
Narwhal	<u>Monodon monceros</u>
Killer Whale	<u>Orcinus orca</u>
Harbor Porpoise	<u>Phocoena phocoena</u>
Gray Whale*	<u>Eschrichtius gibbosus</u>
Finback Whale*	<u>Balaenoptera physalus</u>
Sei Whale*	<u>Balaenoptera borealis</u>
Little Piked Whale*	<u>Balaenoptera acutorostrata</u>
Humpback Whale*	<u>Megaptera novaeangliae</u>
Bowhead Whale*	<u>Balaena mysticetus</u>
Northern Fur Seal	<u>Collorhinus ursinus</u>
Steller Sea Lion	<u>Eumetopias jubata</u>
Pacific Walrus	<u>Odobenus rosmarus</u>
Harbor Seal	<u>Phoca vitulina</u>
Ringed Seal	<u>Phoca hispida</u>
Bearded Seal	<u>Erignathus barbatus</u>

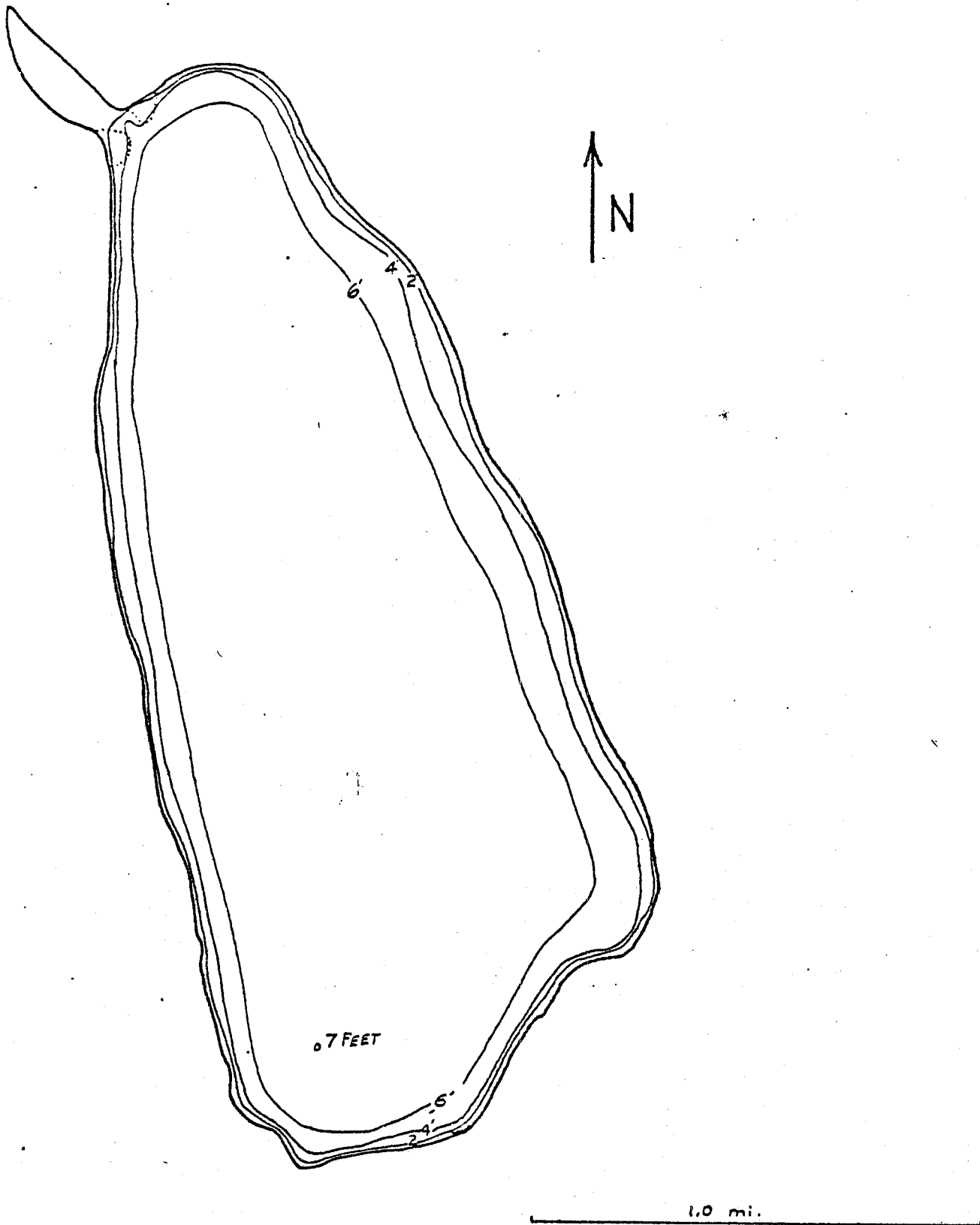
*Endangered Species



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 14: LAKE IDENTITY: Tap#1 (Ikroavik), water source

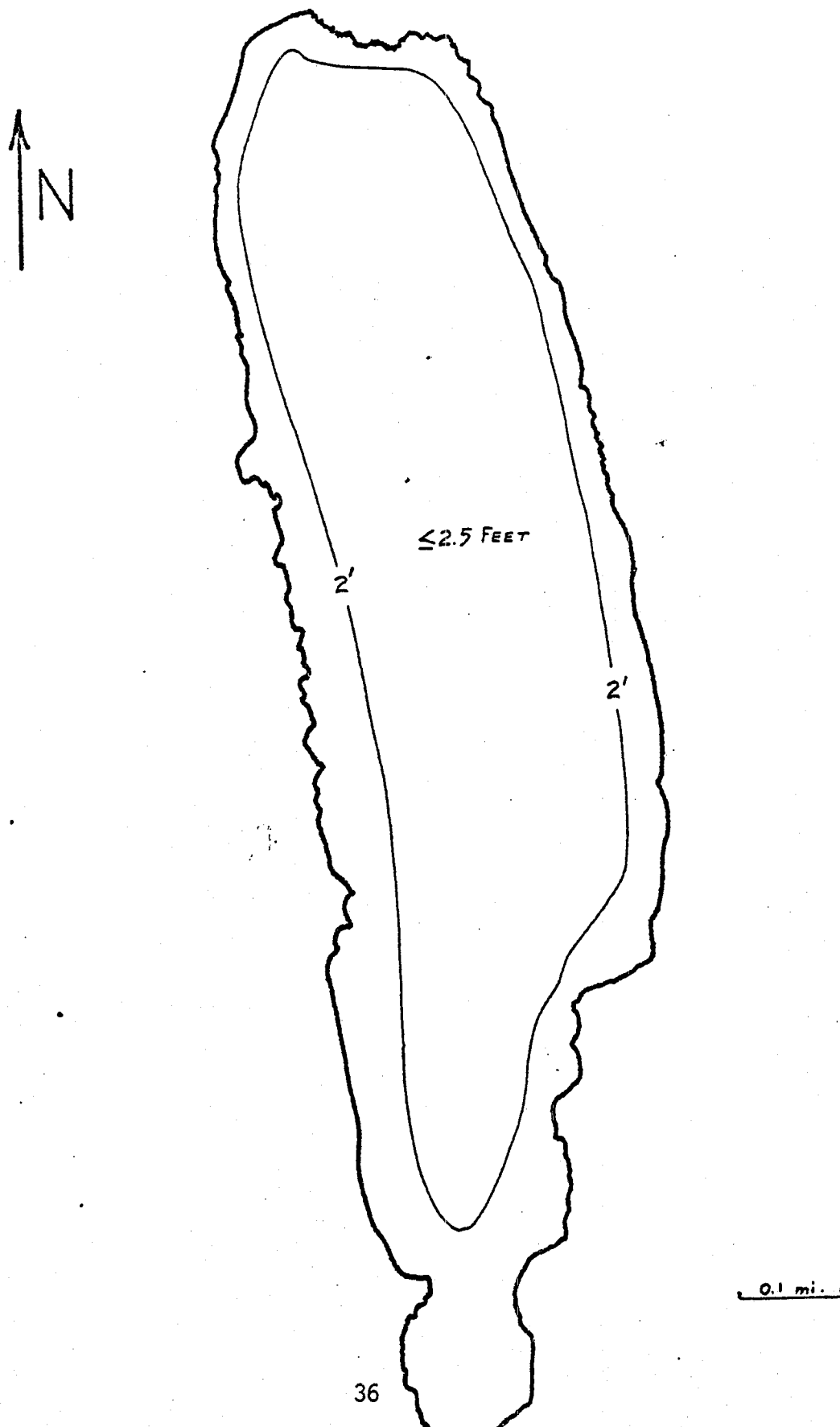
Lat. 71° 13.9' Long. 156° 37.9' Survey Date: 5 Aug. 1978 Scale: 1:21120



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 15 LAKE IDENTITY: Tap #2, ice Herc strip

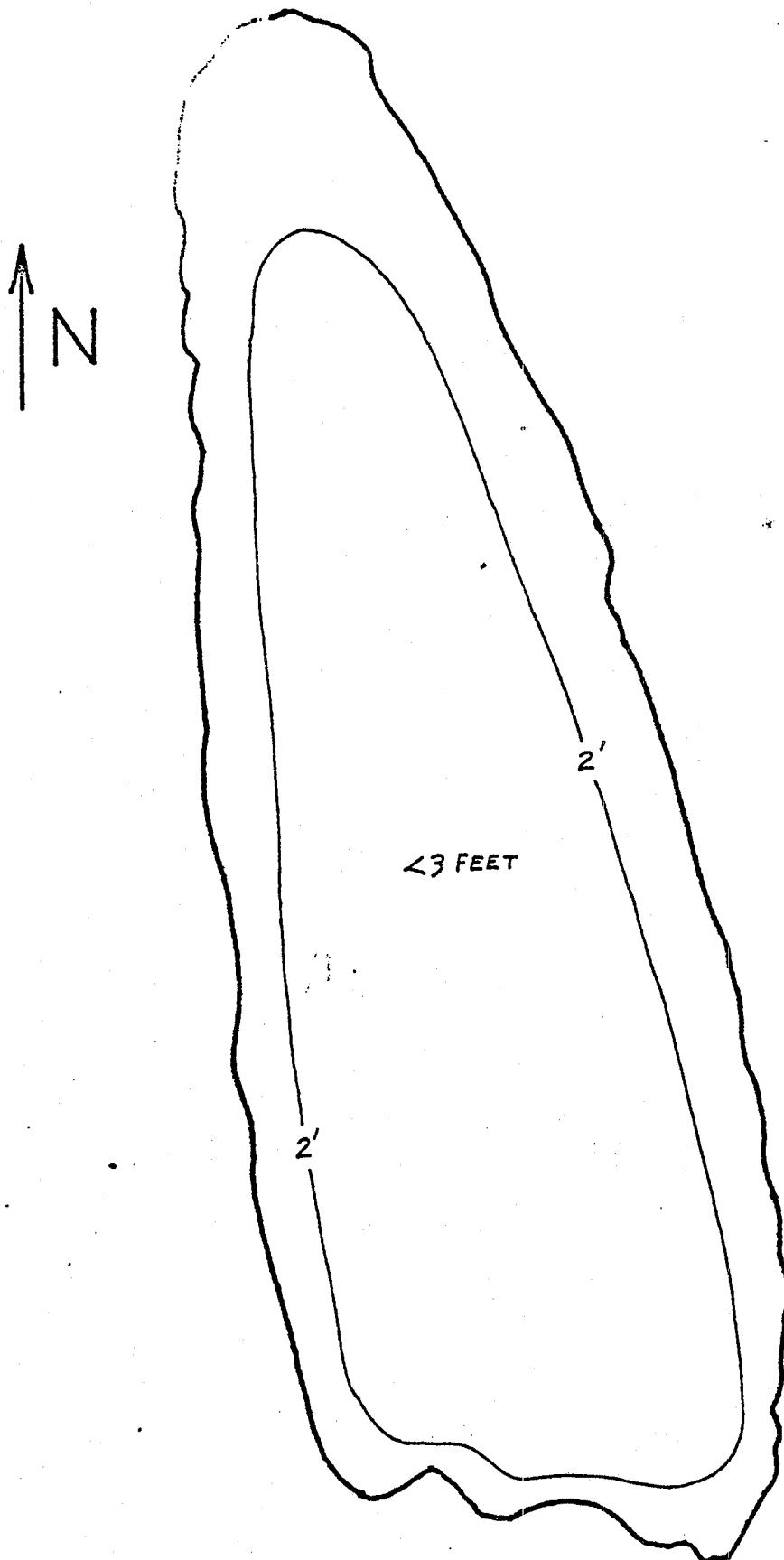
Lat. 71° 13.5' Long. 156° 13.5' Survey Date: 5 Aug. 1978 Scale: 1:10000



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 16: LAKE IDENTITY: Tap #3 (East Twin Lake) Alternate ice Herc strip

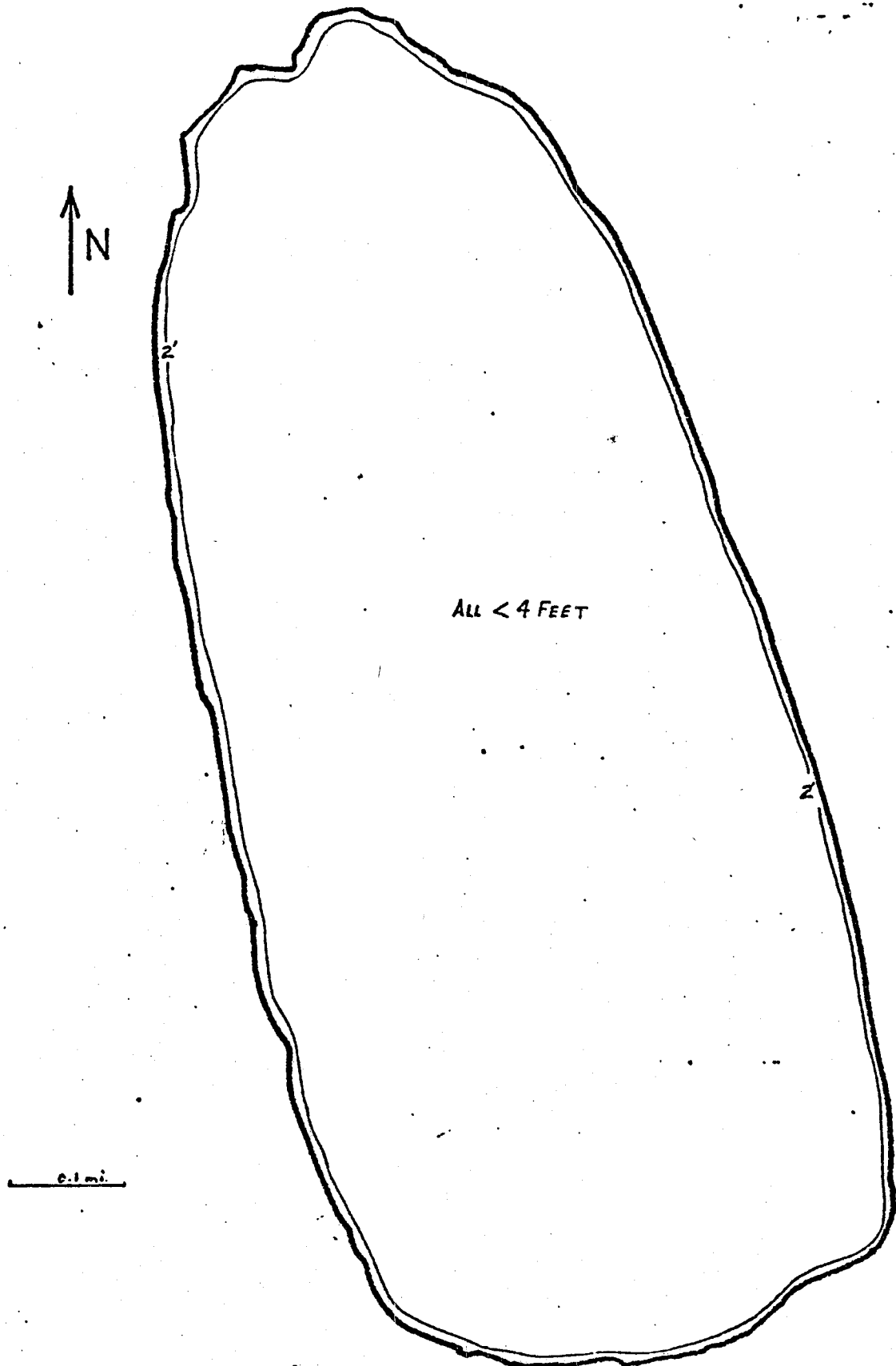
Lat. 71° 16.5' Long. 156° 27.7' Survey Date: 5 Aug. 1978 Scale: 1:10000



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 17 LAKE IDENTITY: Tap #4 (West Twin Lake)

Lat. 71° 16.5' Long. 156° 29.5' Survey Date: 21 Aug 78 Scale: 1:8698



in a floating gill set during the same sampling effort. Two nine spined stickleback were trapped in 4 minnow traps set for 20 hours.

Although this lake contains fish, winter water withdrawals should not significantly impact fish populations.

#2. Ice C-130 Strip

This lake is shallow (2.5 feet) throughout. See Table 1 and Figure #15 for details.

Because it is so shallow, this lake probably does not contain a significant fish population. No impact on fisheries should occur if it is used as a C-130 airstrip during winter months.

#3. East Twin Lake Alternate Ice C-130 Strip

This lake is shallow (3.0 feet) throughout. See Table 1 and Figure 16 for details.

This lake probably does not contain a significant fish population because it is so shallow. No impact should occur if this lake is used as a C-130 airstrip during winter months.

#4. West Twin Lake, Possible Water Supply

This lake has a fairly high specific conductance (500 umhos/cm), as well as, a shallow basin of approximately 4.0 feet. See Table 1 and Figure 17 for details. Due to the shallowness and fairly high specific conductance, we recommend against the use of this lake as a winter water source.

#5. Barrier Island Pond

This shallow pond, located near the well site on Tapkaluk Island had a high salt content (specific conductance of 31,000 umhos/cm). The size of this pond, as well as its specific conductance, is seasonal and highly variable. During spring breakup this pond may cover an area of 5 or more times the size we visited on August 15, 1978. The specific conductance may be rather low in the spring, but will increase steadily throughout the summer with evaporation and salt spray contamination.

J. W. DALTON TEST WELL

A. LAND USE

J. W. Dalton Drilling Site - SW $\frac{1}{4}$ Sec. 11, T. 18 N., R. 5 W., Umiat Meridian, protracted

This proposed location, including the drilling site, proposed borrow sites, water sources and trails, is on public lands within the NPR-A, and within the designated Teshekpuk Lake Special Area.

On the ground examination will reveal any conflicts with existing subsistence sites, cabins or trap lines in the area. The only native allotment applications filed in the general vicinity, but not within the area of operations, were two 160 acre parcels (which are in complete conflict with each other) at Kolovik, two (2) miles southwest of Camp Lonely, within Section 24, T. 18 N., R. 6 W., Umiat Meridian. These are as follows: F-14478, filed by Charles Sakeagak, Barrow, and F-14606, filed by Frieda Elavgak, Barrow. At this time there is no legal validity to these claims as to land estate, however, there are buildings involved (personal property) and the immediate area may be used for subsistence.

B. MAMMALS

Table 9 lists terrestrial mammals observed in the vicinity of the J. W. Dalton Test Well Site during aerial and ground surveys on August 2, and August 15, 1978. Other mammals are reported to occur in habitats similar to those found adjacent to the J. W. Dalton Well site. (Bee and Hall, 1956).

Large mammal species living in the vicinity of the J. W. Dalton well site have been subjected to human activity at the Lonely DEW-line and Husky camp for several years. Some individuals may be displaced by the additional impact of well drilling activities. Most animals probably have habituated to aircraft noise and other disturbing effects of human activity.

A family of arctic foxes was observed in vicinity of the Lonely Dew-line on August 2, 1978. The foxes apparently were denned beneath the buildings and were not disturbed by the human activities present at Lonely. They may be attracted to the area by the presence of food odors and garbage.

TABLE 9 TERRESTRIAL MAMMALS PRESENT IN THE VICINITY
OF THE J. W. DALTON TEST WELL SITE.

Terrestrial Mammals Observed

Arctic Fox	<u>Alopex lagopus</u>
Caribou	<u>Rangifer tarandus</u>
Wolverine*	<u>Gulo gulo</u>

Terrestrial Mammals Probably Present

Masked Shrew	<u>Soxex cinerous</u>
Collared Lemming	<u>Dicrostonyx groenlandicus</u>
Brown Lemming	<u>Lemus trimucronatus</u>
Red Backed Voles	<u>Clethrionomys rutilus</u>
Arctic Ground Squirrel	<u>Spermophilus parryi</u>
Red Fox	<u>Vulpes vulpus</u>
Ermine	<u>Mustela erminea</u>
Least Weasel	<u>Mustela rixosa</u>

*Observed by Mike Kunz, BLM Archaeologist

A small group of bull caribou also live in vicinity of the Lonely airstrip. Bull caribou have been found to be more tolerant of disturbance than are cows and calves (Cameron and Whitten, 1977).

Some small mammals such as ground squirrels, weasels, shrews and microtine rodents, will be killed or displaced by gravel removed and well drilling operations. The numbers of animals lost will not substantially effect population numbers.

Table 10 shows marine mammals which occur in coastal waters adjacent to the J. W. Dalton well site. Bowhead whales and gray whales, ringed seals, bearded seals and polar bears are the most common marine mammal species.

Summer drilling operations may have an impact on marine mammals, including five endangered species of whales. Bearded seals and ringed seals have their pups in April and May in the off shore pack ice (ADF&G, 1973; Burns, 1970). Whales, particularly bowheads and gray whales, may be migrating eastward in open leads during this time period. Low level aircraft should avoid off shore pack ice areas and open leads during spring months to minimize potential disturbance of seals and whales.

Food odors from the Lonely DEW-line and Husky camp may attract polar bears and arctic foxes. Food wastes must be burned promptly and regulations regarding the feeding of wild animals must be enforced to help eliminate possible confrontations of humans and animals.

C. AQUATIC SYSTEMS

The DPO identified water bodies area shown in Figure 18. Figures 19 and 20 provide bathymetry of one lake and the Smith River. Refer to Table 1 for a synopsis of aquatic data.

#1. Possible Water

This lake is both shallow (2.0 feet) and brackish (10,400 umhos/cm). See Table 1 and Figure 19 for detail.

No fish were caught in a seine haul at the northwest end of this lake on August 1, 1978. This lake is too shallow to contain fish. It is also too shallow and brackish to use as a water source.

TABLE 10 MARINE MAMMALS PRESENT IN THE COASTAL WATERS
ADJACENT TO J. W. DALTON TEST WELL SITE

Polar Bear	<u>Ursus maritimus</u>
Beluga	<u>Delphirapterus leucas</u>
Narwhal	<u>Monodon monoceros</u>
Killer Whale	<u>Orcinus orca</u>
Gray Whale*	<u>Eschrichtius gibbosus</u>
Finback Whale*	<u>Balaenoptera physalus</u>
Sei Whale*	<u>Balaenoptera borealis</u>
Little Piked Whale	<u>Balaenoptera acutorostrata</u>
Humpbacked Whale*	<u>Megaptera novaeangliae</u>
Bowhead Whale*	<u>Balaena mysticetus</u>
Pacific Walrus	<u>Odobenus rosmarus</u>
Harbor Seal	<u>Phoca vitulina</u>
Ringed Seal	<u>Phoca hispida</u>
Bearded Seal	<u>Erignathus barbatus</u>

* Endangered Species

J.W. DALTON WELL SITE

Pitt Point

PROPOSED TRAIL SUBJECT
TO REVISION FOLLOWING
ADDITIONAL SURVEYING

PROPOSED
BORROW SITE
NO. 1

PROPOSED
BORROW
NO 2

Possible
WATER SOURCE

SMITH RIVER
#3

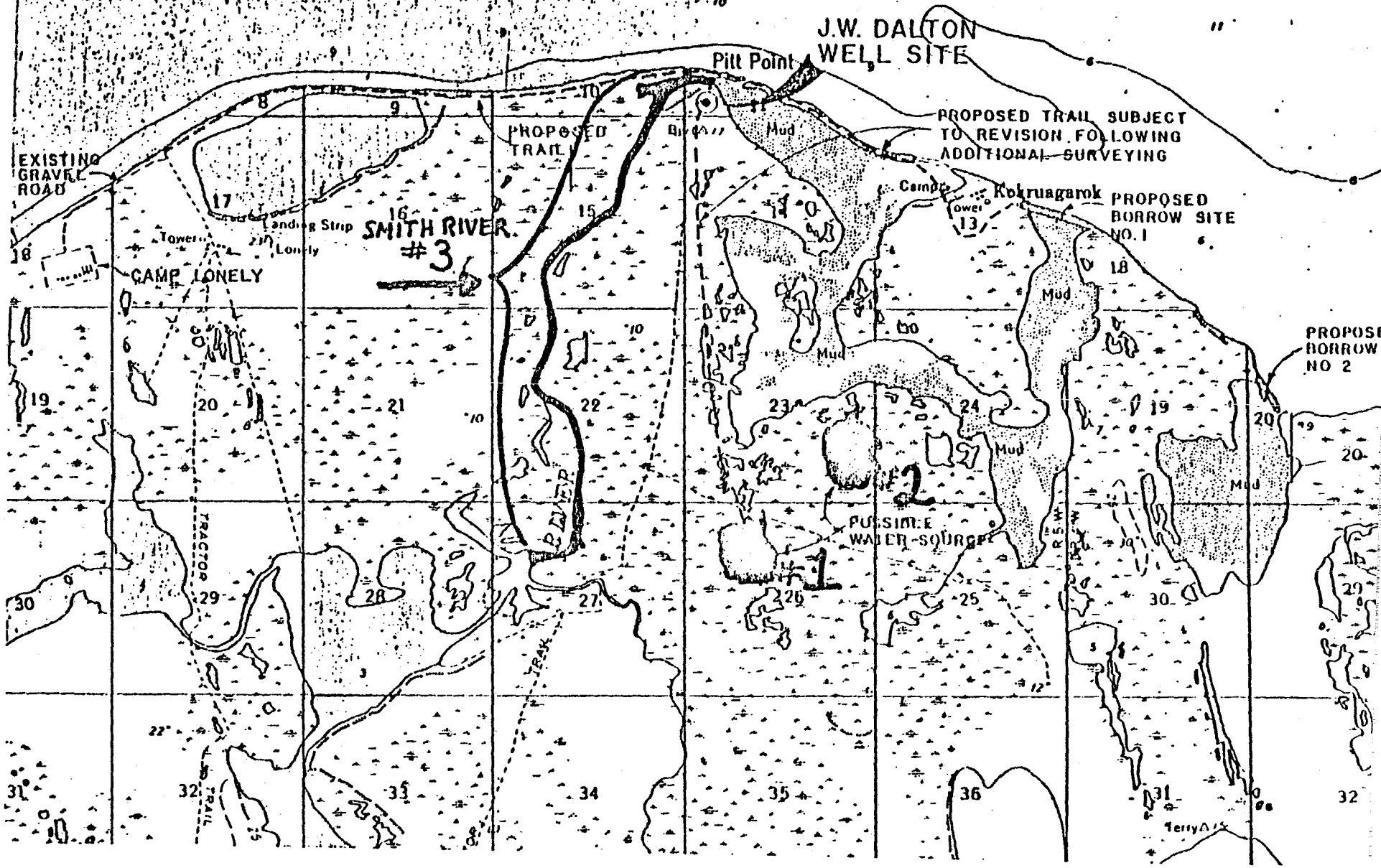
CAMP LONELY

EXISTING
GRAVEL
ROAD

Landing Strip
Lonely

TRACTOR
TRAIL

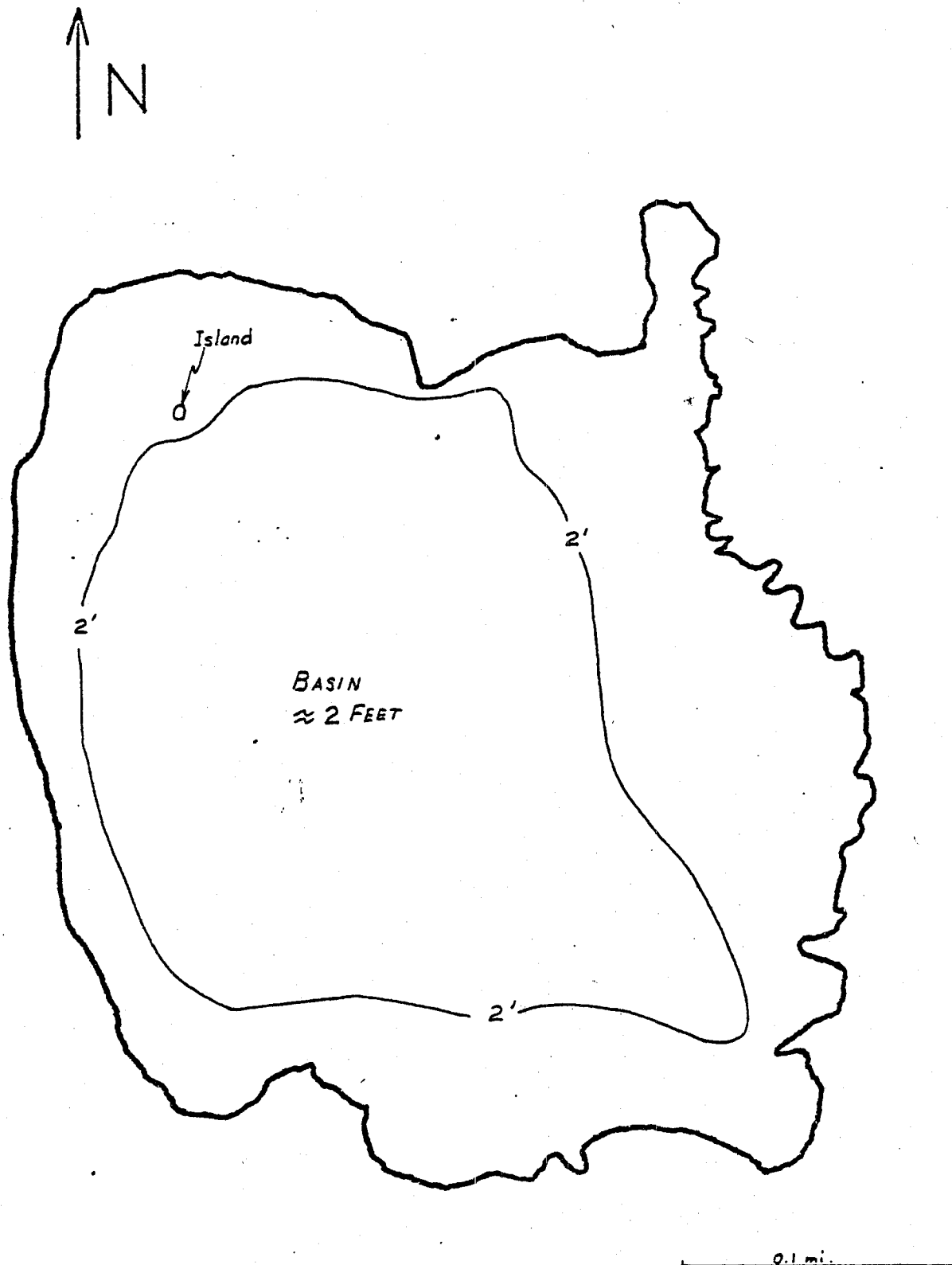
Terry A



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 19 LAKE IDENTITY: Dalton #1, possible water source

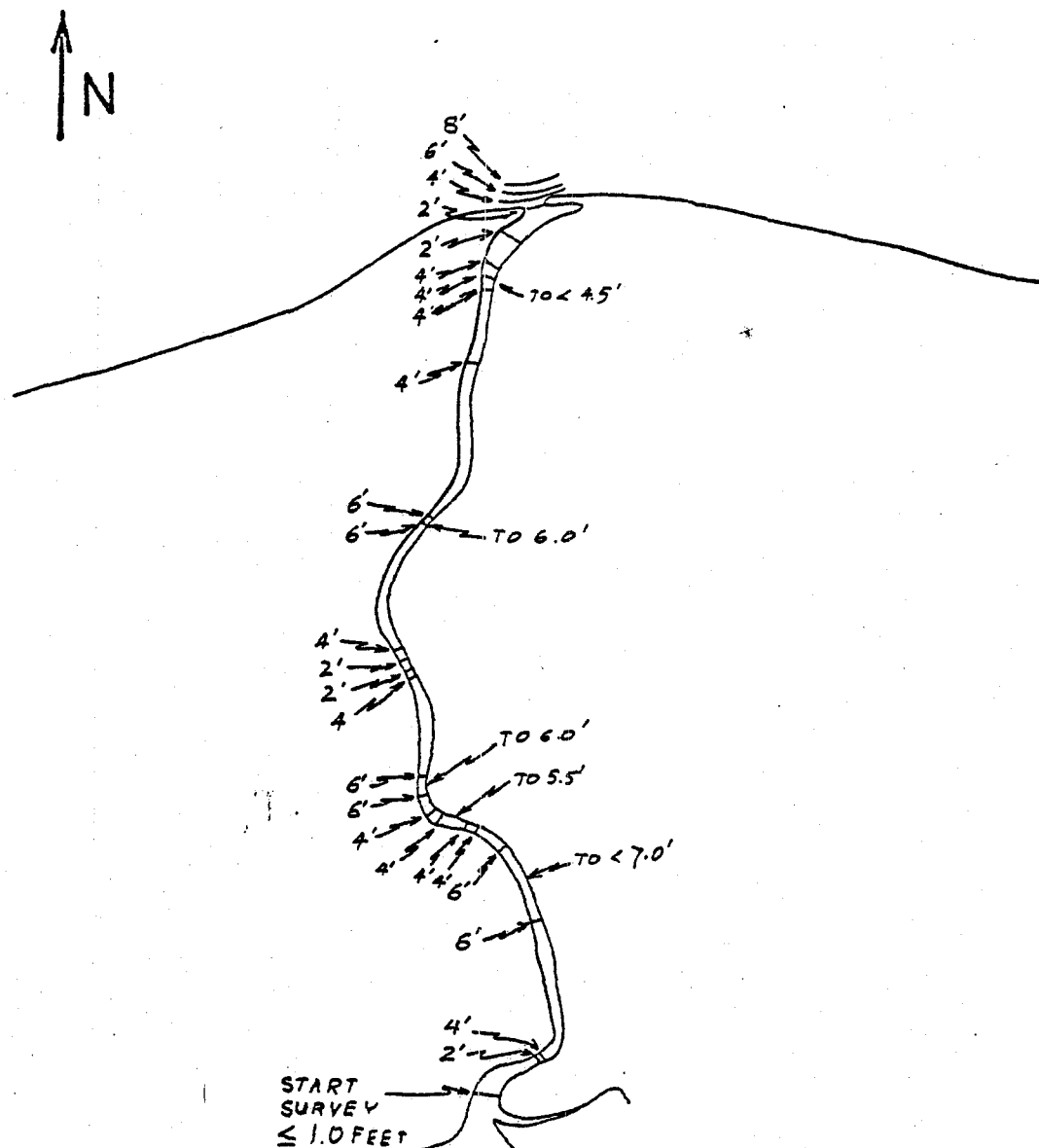
Lat. 70° 53.2' Long. 153° 06.0' Survey Date: 1 Aug. 1978 Scale: 1:3630



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 20 LAKE IDENTITY: Dalton #3 (Smith River)

Lat. 70° 56' Long. 153° 10' Survey Date: 2 Aug. 1978 Scale: 1:36800



#2. Possible Water

This lake is estuarine. Summer 1977 aerial photographs show this basin drained. This basin was not sampled, but must be very shallow (2 feet) with high salinity.

This will not be an adequate water source.

#3. Smith River

This river is estuarine for at least three miles up from the mouth. A fathometer transect was acquired down midriver with channel depths as shown in Figure 20. No depths greater than 7.0 feet were noted (Table 1).

The Smith River is an anadromous fish stream which contains arctic char, least cisco, and possibly other species. Three arctic char and 15 least cisco were caught on August 2, 1978 in a floating gill net set for 20 hours (Table 2). No fish were captured in two minnow traps set for 20 hours.

This river contains anadromous species and has been proposed as a water source for summer drilling operations. In addition the river will have to be spanned in order to transport supplies to the well site. These activities present potential disturbing effects to fish populations and habitat. A clear channel of sufficient depth to allow migrating fish to traverse the river must be maintained beneath any structure bridging the river. Alternate water sources should be selected in case summer flows are inadequate for water removal.

CARBON TEST WELL SITE (PAD ONLY)

A. LAND USE

Carbon Drilling Site - NW¼ Sec 31, T. 2 N., R. 34 W., Umiat Meridian, protracted

The proposed drilling site is located on public lands within the designated Utukok Uplands Special Area, set aside for the protection of the Western Arctic Caribou Herd at calving time in the spring.

The proposed well site and borrow sites No. 1 and 2 are approximately seven (7) miles west of the Utukok River, which has been proposed as a Wild and Scenic River in H.R. 39. The proposed winter Herc strip, Otter

strip, possible water source and a portion of the proposed winter trail lie within the Wild and Scenic River corridor.

This is an area of heavy subsistence use, primarily by natives from Wainwright.

An on-the-ground examination, as well as inquiry within the village at Wainwright, should reveal any subsistence camp or trap line conflicts which may arise. No native allotments were filed for lands in the general area.

B. MAMMALS

Table 11 lists mammals observed in the vicinity of the well site and borrow pits as well as water sources and airstrip sites near the Utukok River. Other mammals have been seen in adjacent areas or are reported in habitats similar to those found in vicinity of the Carbon well site (Bee and Hall, 1956).

This site is located within the core calving area of the Western Arctic caribou herd. This is a critical habitat for this herd which has suffered a major population decline between 1970 and 1976 (Davis, Grauvogel and Reynolds, 1976). The calving area of the Western Arctic herd had been designated as the Utukok Special Area. The Carbon well site location is within an area which is utilized by a majority of calving females (Davis, per com.).

Recent work by Cameron and Whitten (1976 and in press) shows that caribou cows and calves are particularly sensitive to disturbance, such as occurred during construction and maintenance of the Trans-Alaska pipeline. Drilling activities, if pursued during the calving season could negatively effect calf production and survival in the Western Arctic caribou herd.

This area is one of the most sensitive habitats for mammals in NPR-A. All proposed activities must be carefully planned and conducted to avoid disturbance of pregnant and parturient females as well as calves following their birth.

No exploration activities including surveying, rig moves, construction or drilling should be allowed at the Carbon site when pregnant females or cows with calves are present in the area. This time period is usually between April 30 and June 30 but may vary depending on seasonal conditions.

TABLE 11 MAMMALS PRESENT IN THE VICINITY
OF THE CARBON TEST WELL SITE

Mammals Observed

Arctic Ground Squirrel	<u>Spermophilus parryii</u>
Grizzly Bear	<u>Ursus arctos</u>
Moose	<u>Alces alces</u>
Caribou	<u>Rangifer tarandus</u>

Other Mammals Probably Present *

Masked Shrew	<u>Sorex cinereus</u>
Collared Lemming	<u>Dicrostonyx torquatus</u>
Brown Lemming	<u>Lemus trimucronatus</u>
Red Backed Vole	<u>Clethrionomys rutilus</u>
Tundra Vole	<u>Microtus oeconomus</u>
Singing Vole	<u>Microtus gregalis</u>
Wolf	<u>Canis lupus</u>
Arctic Fox	<u>Alopex lagopus</u>
Red Fox	<u>Vulpes vulpes</u>
Ermine	<u>Mustela erminea</u>
Least Weasel	<u>Mustela nivalis</u>
Wolverine	<u>Gulo gulo</u>

Some animals utilize this area as summer range. Eighteen caribou were observed near the well site on August 9, 1978.

Moose utilize willow areas along the Utukok River near the proposed C-130 airstrip. Carnivores including foxes, wolves, and wolverine probably hunt along the gravel bars of the river. Grizzly bears also use this area. Individuals of these species will be probably displaced from the immediate vicinity of the airstrip due to disturbance by aircraft noise.

Some small mammals including ground squirrels, shrews, microtine rodents and weasels will be killed or displaced by activity along winter roads, as well as during gravel removal and well drilling operations. The numbers of animals lost will not effect total populations of these species. No fox or bear dens were observed at the well site or borrow sites.

C. AQUATIC SYSTEMS

The DPO identified water bodies area shown in Figure 21. Figure 22 provides bathymetry of one lake while Figure 23 is the shoreline only of another. Refer to Table 1 for a synopsis of aquatic data.

#1. Proposed Otter Strip

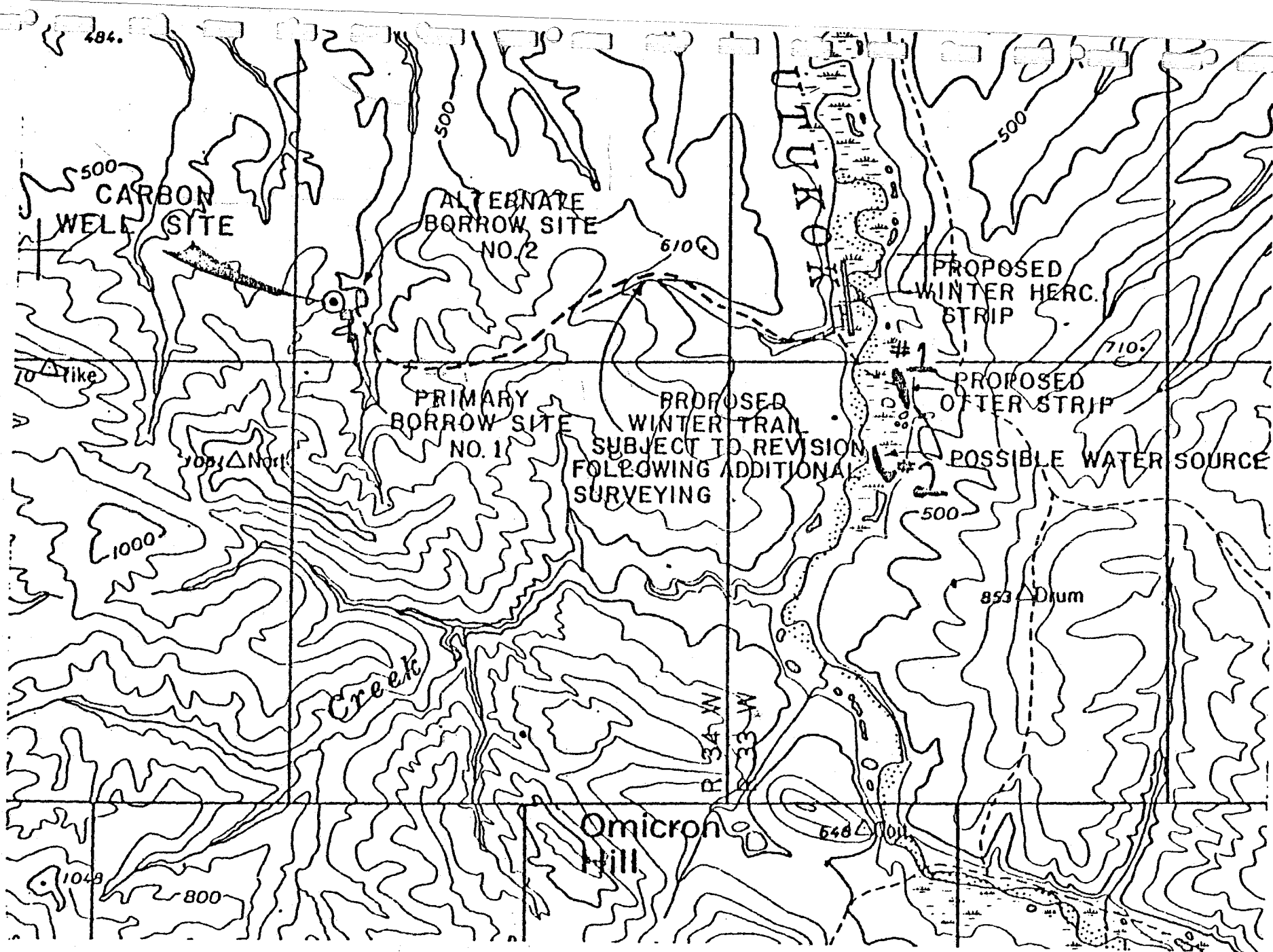
This oxbow lake has water depths close to 10 feet, but it shallows up rapidly with emergent vegetation along both shores.

No fish were caught in this lake during 5 hours of sampling with a sinking gill net and one hour of angling. However, its location on the flood plain of the Utukok River and its depth make it possible that a fish population, such as grayling, exists in this lake. Arctic loons were observed on this lake on two different dates suggesting that a fish food source may be present.

Use of this lake as a winter otter strip should not severely impact this lake system. This lake has a limited winter water supply.

#2. Possible Water Source

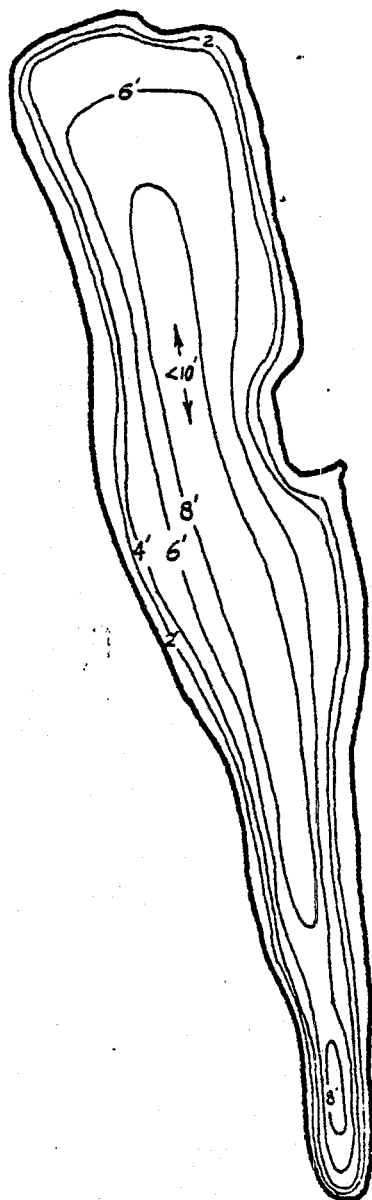
This lake was 5.0 feet deep as measured by Bell Herring. The surface area of this lake is only about 7 acres.



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 22 LAKE IDENTITY: Carbon #1, proposed Otter strip & possible water source

Lat. 69° 18.2' Long. 160° 1.0' Survey Date: 14 Aug. 1978 Scale: 1:6000

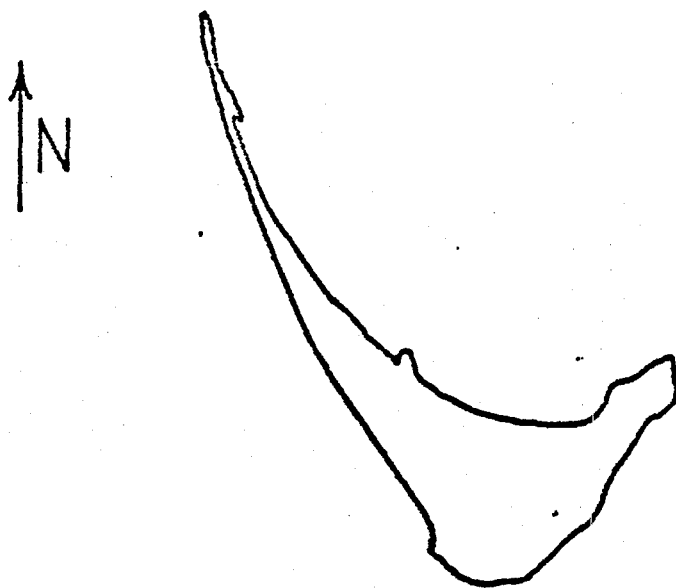


0.1 mi.

CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 23 LAKE IDENTITY: Carbon #2, possible water source

Lat. 69° 17.3' Long. 160° 1.5' Survey Date: no transects Scale: 1:6000
Bell Herring depth 5.0 feet



0.1 mi.

This lake is shallow and probably does not contain any significant fish populations.

This lake will probably freeze to the bottom by mid-winter and may be too shallow to be used as a winter water source.

KUNGOK TEST WELL (PAD ONLY)

A. LAND USE

Kungok Drilling Site - NE $\frac{1}{4}$ Sec. 15, T. 12 N., R. 29 W., Umiat Meridian, protracted

Located on public lands, approximately seven (7) miles southeast of the boundary of lands conveyed to the Olgoonik Corporation (Wainwright). The proposed area of operations does not lie within any designated Special Area.

There are no know cabins or subsistence camps, however, many trap lines criss-cross the entire area, radiating outwards from Olgoonik lands. The only native allotment filed for lands within the general area is F-14342 C, Warner K. Asogeak, Wainwright. This was for eighty (90) acres on the right bank of the Mikigealiak River, in Section 20, T. 13 N., R. 29 W., Umiat Meridian, approximately 3 $\frac{1}{2}$ miles northwest of proposed borrow sites 3 and 4. At this time, the application has no validity, however, a subsistence site and area (perhaps trap lines) of subsistence use may be present.

Near to the Pear Bay staging area, a native allotment (F-11958) was filed for forty (40) acres within the NW $\frac{1}{4}$ of Section 19, T. 17 N., R. 24 W., Umiat Meridian, by Winifred Ahvakana of Barrow. The application has not been considered to be valid (as is the case for almost all applications filed for lands within the NPR-A), however, a subsistence camp does exist there.

KIGALIK TEST WELL SITE (ALTERNATE PAD ONLY)

A. LAND USE

Kigalik Drilling Site - NW $\frac{1}{4}$ Sec. 6, T. 1 N., R. 22 W., Umiat Meridian, protracted

Located on public lands, approximately five and one-half (5½) miles east, and outside, of the boundary of the Utukok Uplands Special Area.

No known cabins, subsistence camps or trap lines are known to exist within the general area, however, examination would be needed to verify their non-existence. No native allotment applications were filed for lands within the general area.

B. MAMMALS

Table 12 lists species observed in the vicinity of the Kigalik well site, water sources, borrow pits and air strip sites. Other species are reported to be in similar habitat (Bee and Hall, 1956).

This area is utilized by caribou as summer range. On August 12, 1978, 170 caribou were seen in the vicinity of the well site. Winter operations proposed for this site will not disturb caribou as few animals remain in this area during winter months.

No fox dens or bear dens were found at the well site, air strip or borrow sites. Arctic ground squirrel dens are numerous. Some ground squirrels, shrews, microtine rodents, and weasels will be killed or displaced by drilling and construction activities. Population numbers will not be significantly affected by these losses.

C. AQUATIC SYSTEMS

The DPO identified water bodies are shown in Figure 24. All 3 of these lakes were too small to be visited by float plane. Refer to Table 1 for a synopsis of aquatic data. The lakes are all small and probably do not contain significant fish populations.

#1. Proposed Otter Strip and Water Source

Figure 25 shows the shoreline of this 13 acre lake. Bell Herring measured a water depth of 4.0 feet. Little impact will occur if this lake is used as an ice airstrip. The lake is too shallow to be used as a winter water supply.

#2. Potential Water Source

This lake is about 6 acres and has 8.0 feet of water depth as measured by Bell Herring. This lake may be too small to be used throughout the winter as a water source.

TABLE 12 MAMMALS PRESENT IN VICINITY OF
THE KIGALIK TEST WELL SITE

Mammals Observed

Arctic Ground Squirrel	<u>Spermophilus parryi</u>
Grizzly Bear*	<u>Ursus arctos</u>
Caribou	<u>Rangifer tarandus</u>

Other Mammals Probably Present

Masked Shrew	<u>Sorex cinereus</u>
Arctic Shrew	<u>Sorex arcticus</u>
Dusky Shrew	<u>Sorex obscurus</u>
Collared Lemming	<u>Dicrostonyx torquatus</u>
Brown Lemming	<u>Lemos trimucronatus</u>
Red Backed Vole	<u>Clethrionomys rutilus</u>
Tundra Vole	<u>Microtus oeconomos</u>
Singing Vole	<u>Microtus gregalis</u>
Red Fox	<u>Vulpes vulpes</u>
Arctic Fox	<u>Alopex lagopus</u>
Wolf	<u>Canis lupus</u>
Least Weasel	<u>Mustela nivalis</u>
Ermine	<u>Mustela erminea</u>
Wolverine	<u>Gulo gulo</u>
Moose	<u>Alces alces</u>

* Observed by John Haugh, USGS Environmentalist

KIGALIK
WELL SITE

555
PRIMARY
BORROW SITE NO. 3 640

ALTERNATE
BORROW SITE
NO. 2

PROPOSED ICE ROAD
SUBJECT TO REVISION
FOLLOWING ADDITIONAL
SURVEYING

PROPOSED WINTER
OUTER STRIP

PROPOSED WINTER
INNER STRIP

PROPOSED
WATER SOURCE #1

ALTERNATE
BORROW SITE
NO. 1

#2

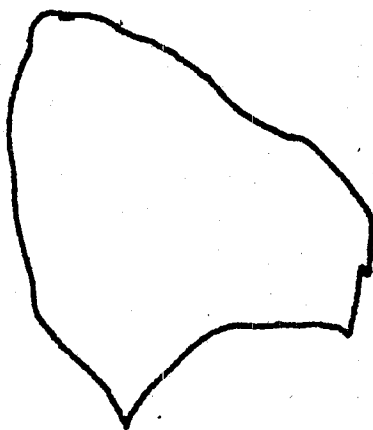
POTENTIAL
WATER SOURCE

#3

CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 25 LAKE IDENTITY: Kigalik #1, proposed Otter strip & water source

Lat. 69° 23.6' Long. 157° 22.0' Survey Date: no transects Scale: 1:6000
Bell Herring depth 4.0 feet



0.1 mi.

#3. Potential Water Source

This lake is also about 6 acres but has only 5.0 feet of water depth as measured by Bell Herring. This lake is too shallow to be used throughout the winter as a water source.

ETIVILUK TEST WELL SITE (ALTERNATE PAD ONLY)

A. LAND USE

Etivluk Drilling Site - SW $\frac{1}{4}$ Sec 17, T. 12 S., R. 21 W., Umiat Meridian, protracted

Drilling site and ancillary sites are located on public lands and are not within any designated Special Area. There are no known subsistence camps, cabins or trap lines within the general area of operations, however, a field examination possibly could reveal some that are not known at this time.

On October 17, 1977 the Etivluk River was recommended as a Wild river for inclusion in HR 39. HCRS is recommending a four (4) mile special protection corridor for potential wild and scenic rivers. The management responsibility is vested in the BLM, within the NPR-A. No native allotment applications were filed for lands within the general area.

B. MAMMALS

Table 13 lists species observed at the Etivluk well site, borrow pits, water sources and winter air strips during aerial surveys on August 12, 1978. Other mammals have been observed in adjacent areas or are reported to be in habitats similar to those found near the Etivluk site (Bee and Hall, 1956).

Caribou utilize this area as summer range. Thirty-nine caribou were observed in the vicinity of the well site on August 12, 1978. Numerous caribou trails in the vicinity of Betty Lake demonstrate the importance of this region as a major migration route. Year round drilling activities, particularly noise associated with aircraft may cause displacement of individuals into adjacent areas.

Foxes, and grizzly bears during summer months, may be attracted to the drilling camp by food odors. Careful handling of food wastes and adherence to regulations regarding the feeding of wild animals will minimize possibilities of human-animal confrontations.

TABLE 13 MAMMALS PRESENT IN VICINITY OF
THE ETIVLUK TEST WELL SITE

Mammals Observed

Arctic ground squirrel	<u>Spermophilus parryii</u>
Caribou	<u>Rangifer tarandus</u>

Other Mammals Probably Present

Masked Shrew	<u>Sorex cinereus</u>
Arctic Shrew	<u>Sorex arcticus</u>
Dusky Shrew	<u>Sorex obscurus</u>
Collared Lemming	<u>Dicrostonyx torquatus</u>
Brown Lemming	<u>Lemus trimucronatus</u>
Red Backed Vole	<u>Clethrionomys rutilus</u>
Tundra Vole	<u>Microtus oeconomus</u>
Singing Vole	<u>Microtus gregalis</u>
Red Fox	<u>Vulpes vulpes</u>
Arctic Fox	<u>Alopex lagopus</u>
Wolf	<u>Canis lupus</u>
Grizzly Bear	<u>Ursus arctos</u>
Least Weasel	<u>Mustela nivalis</u>
Ermine	<u>Mustela erminea</u>
Wolverine	<u>Gulo gulo</u>
Moose	<u>Alces alces</u>

There are no fox or bear dens located at borrow sites or at the well sites. Ground squirrels and other small mammals will be killed during drilling activities but the numbers lost should not substantially effect total population numbers.

If any grizzly bear dens are located near the Etivluk well site, traffic should be routed away from the area to avoid possible disturbances.

C. AQUATIC SYSTEMS

The DPO identified water bodies are shown in Figure 26. Refer to Table 1 for a synopsis of aquatic data.

#1. Possible Water Source

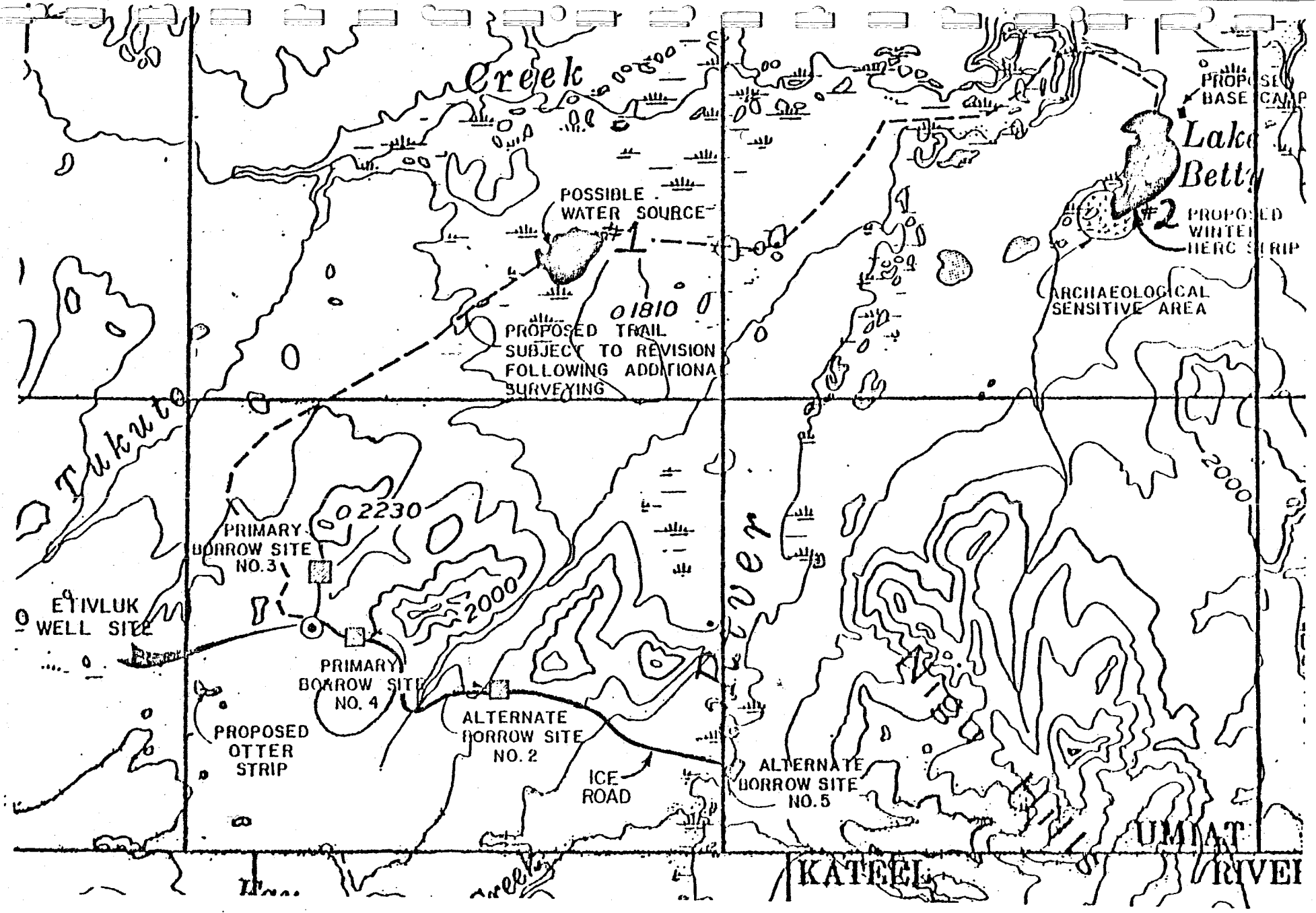
This lake has low dissolved solids (specific conductance 32 umhos/cm) and a water depth of 6.0 feet. Table 1 has calculations for acres of water at depth contours shown in Figure 27.

This proposed water source lake probably does not contain a significant fish population. No impact will occur if this lake is used as a water source, but the lake may not be deep enough to be used throughout the winter.

#2. Betty Lake

The use of Betty Lake is addressed in the Lisburne site.

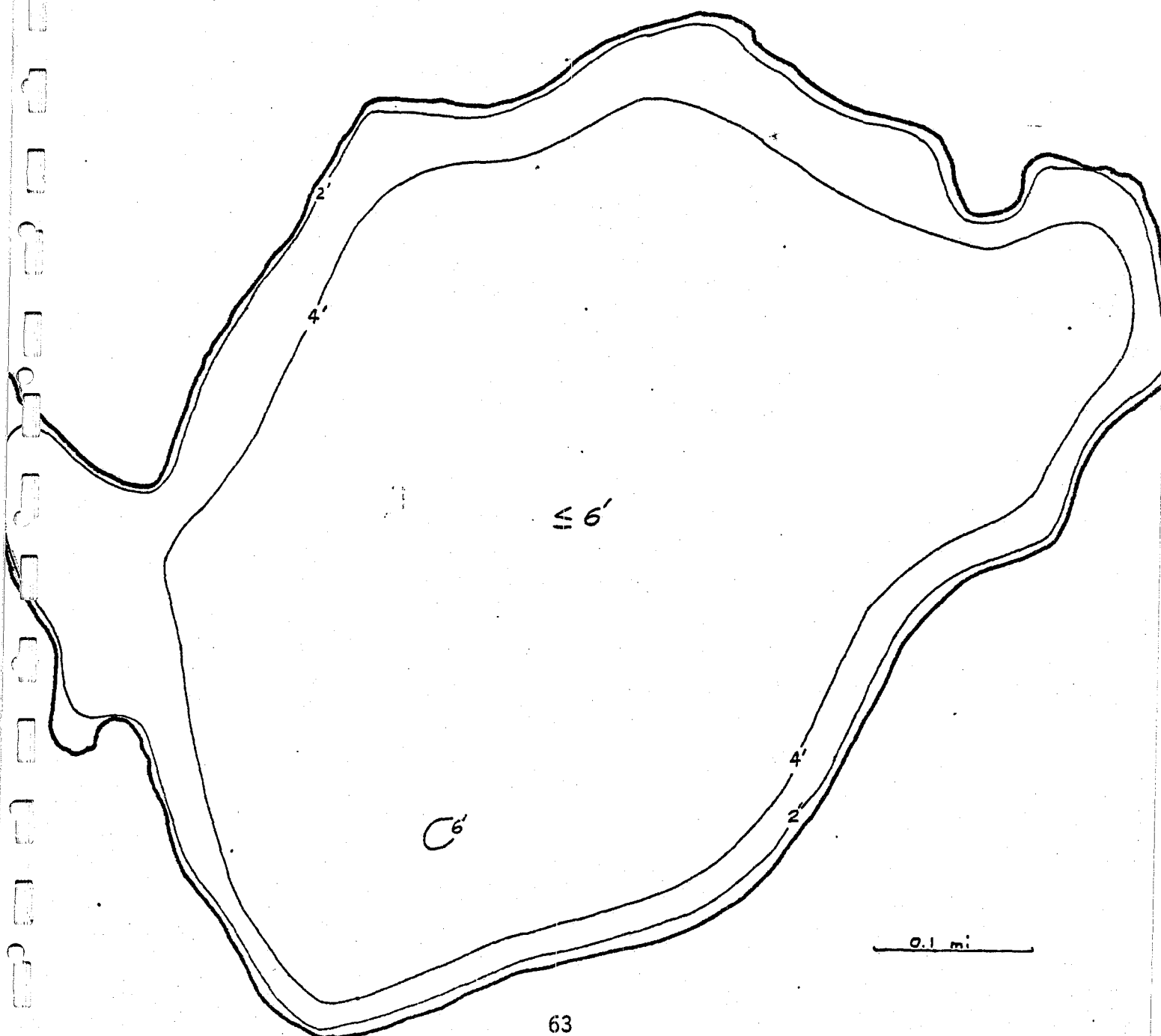
Etiyuk Test Well No. 1 (Pad)



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 27 LAKE IDENTITY: Etivluk #1, possible water source

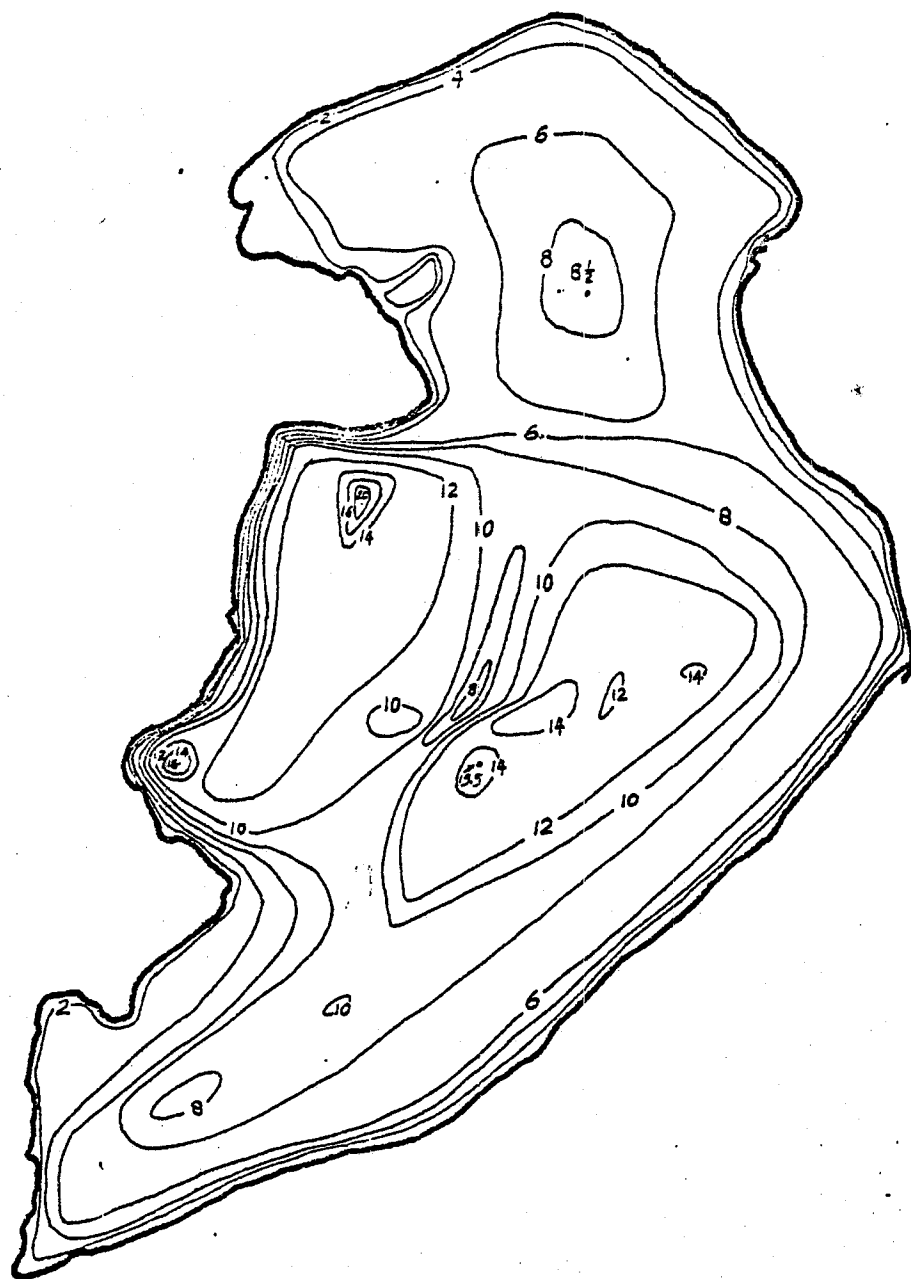
Lat. 68° 27.9' Long. 156° 44.5' Survey Date: 12 Aug. 1978 Scale: 1:6000



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 28 LAKE IDENTITY: Etivluk #2(Lake Betty), Base Camp & proposed Herc strip

Lat. 68° 28.6' Long. 156° 29.5' Survey Date: 12 Aug. 1978 Scale: 1:12000



0.1 mi

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III APPENDICES

A. GENERAL COMMENTS ON ANNUAL PLAN by BLM STAFF

1. FUEL SPILLS

Any lakes used for winter ice landing strips where refueling is necessary must have special fuel containment measures. Especially those lakes with fisheries or that have significant outflow (ie. Betty, Ikroavik, Carbon lakes, etc.) must get adequate attention to remove the threat of fish kills and wide dispersal of fuel contaminants. Suggestions for additions to oil spill stipulations in the DPO for these and other sensitive areas include:

- a. Provide an impermeable catchment basin for unavoidable small, but frequent fuel spills.
- b. Have a trained fuel spill team experienced in containment and cleanup procedures that can be called up on and activated immediately in case of major spills, rather than relying on untrained personnel.

2. MAINTAINING INTAKE WATER QUALITY

Maximum summer water quality can be achieved by withdrawing water from the upwind (windward) side of lakes. Most lakes have peat and fine sediments that are kept suspended in the water column by wind generated wave activity. Since waves are smaller on the upwind side adverse particulates can be minimized by some care in intake positioning (ie. use of natural harbors and prevailing wind direction data).

3. SEISMIC OPERATIONS IN UTUKOK SPECIAL AREA

The stipulations concerning winter seismic and related geophysical operations should state that no seismic operations will be conducted within the Utukok Special Area after April 30 to avoid disturbing pregnant caribou.

4. DEBRIS ON SHOT LINES (PAGE A-6, #15)

Drill bits and stakes should be included in the list of foreign debris to be picked up along shot lines. These items were left along some of the seismic lines shot last winter.

B. MISCELLANEOUS OBSERVATIONS OF BIRDS IN
VICINITY OF PROPOSED WELL SITES

<u>SITE</u>	<u>DATES OBSERVED</u>	<u>COMMON NAME</u>
Lisburne	Aug. 1, 12, 14	Canana Goose Black Brant White Fronted Goose Willow Ptmarigan Rough Legged Hawk Gyr Falcon Northern Phalarope Savanna Sparrow
Seabee	Aug. 3, 12	Mew Gull Semi Palmated Plover Rough Legged Hawk Northern Shrike Raven Redpoll
Peard	Aug. 6 - 10	Red Throated Loon Arctic Loon Willow Ptmarigan Pectoral Sandpiper Dunlin Semi Palmated Plover Long Tailed Jaeger Pomerine Jaeger Glaucous Gull Arctic Tern Northern Phalarope Snowy Owl Savanna Sparrow Lapland Long Spur

<u>SITE</u>	<u>DATES OBSERVED</u>	<u>COMMON NAME</u>
Tapkaluk (Water source and air strip)	Aug. 5	Arctic Loon Old Squaw Dunlin Pectoral Sand Piper Semi Palmated Sand Piper Red Phalarope Glaucous Gull Long Tailed Jaeger Snowy Owl Lapland Long Spur
(Island)		Kittiwake Sabine's Gull Glaucous Gull Arctic Tern
J. W. Dalton	Aug. 15	Glaucous gull White Fronted Goose
Carbon (Utukok River)	Aug. 14	Arctic Loon Pintail Golden Eye Rough Legged Hawk Marsh Hawk Willow Ptmarigan Long Tailed Jaeger Short-eared Owl Northern Shrike
Kigalik	Aug. 12	Pomerine Jaeger Willow Ptmarigan Mew Gull
Etivluk (water source lake)	Aug. 12	Red Poll

APPENDIX C

Comments Received From Other Agencies
(accumulated to date)



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

National Petroleum Reserve in Alaska
2525 C Street - Suite 400
Anchorage, Alaska 99503

August 9, 1978

Memorandum

To: Chief of Operations, ONPRA
From: John R. Haugh and Pat Reynolds
Subject: Recommendations for changes at Lisburne site

On August 1, 1978, we visited the proposed Lisburne exploration site for the purpose of examining the planned locations of the wellsite, airstrip, and material sites in relation to nesting raptors in the area. Other individuals accompanying us were: Tom Brooks (Husky Oil), John Ireton (Husky Oil), Ed Hall (USGS), Robert Gal (BLM), Rob Lipkin (CRREL), Jim Stout (USGS), and Irv Tailleux (USGS).

After careful evaluation of the situation, we suggest the following changes be made in the Lisburne exploration plan if feasible from an engineering standpoint:

1. The proposed all-season heli strip be moved from its present location to a point near the middle of the valley and be oriented on a north-south axis in a way that both approaching and departing aircraft could avoid flying over the bluffs on the west side of Iteriak Creek, as well as the bluffs on the west side of an unnamed tributary upstream from its confluence with Iteriak Creek. The airstrip should also be oriented so as to avoid directing approaching or departing aircraft over the bluffs on the west side of Otuk Creek.

The bluffs along Iteriak Creek provide excellent habitat for nesting gyrfalcons, and rough-legged hawks may occasionally nest there as well. The bluffs along Otuk Creek provide good nesting habitat for rough-legged hawks and may, in some years, also be used as nesting and hunting sites by gyrfalcons.

We considered an alternative of moving the airstrip northward so as to completely avoid the known raptor sites in the vicinity of the proposed Lisburne well. However, additional bluffs are located further north which appear also likely to be used by raptors. To avoid all potential raptor sites would probably require the moving of the airstrip at least fifteen miles to the north and perhaps much further. The required access road to the wellsite would then disturb so much land, not only for the road but also for materials, and the environmental impact would be so great, that this alternative was rejected and is not considered to be a viable option. Moving the airstrip to the south is likewise not a viable option because of mountainous terrain and/or additional raptor nesting locations.

If the airstrip cannot be centered in the valley, it would be more desirable to move it east of the valley center toward Otuk Creek since raptors did not nest on the bluffs along the Otuk in 1978. However, four abandoned nests were found on these bluffs, thus indicating that in some years this area also serves as important raptor habitat. Therefore, the best solution appears to be to keep the airstrip as close to the center of the valley as conditions permit.

2. No materials be mined from material sites within one mile of the known active raptor nesting sites. If materials must be mined within one mile of a nest site, it is recommended that the material be removed before the first of March or after the first of August. (See attached map locating known active raptor sites in 1978).
3. Secondary impacts of building an all-season airstrip at the Lisburne site are a very real concern. The strip will provide reasonably inexpensive access to the area via fixed-wing aircraft. After exploration at the site is completed, the strip could provide unscrupulous individuals the means to illegally take raptors or other wildlife for personal gain. We consider it desirable to deter this potential by altering the airstrip at the conclusion of the exploratory program so that it is no longer functional for fixed-wing aircraft. If, however, oil or gas is discovered at, or near, the site and further exploration or development is anticipated, it may be desirable to maintain the airstrip in operating condition as long as a legitimate need

remains. Such a decision would be made by the USGS Chief of Operations, ONPRA.

4. Little is known of the impacts of aircraft on gyrfalcons and rough-legged hawks in isolated arctic areas, and because of the increased activity and interest in such areas, information is badly needed.

Therefore, we propose that, with the concurrence of the USGS Chief of Operations, BLM designate the bluffs along Otuk and Iteriak Creek as a biological study area, and that during the exploration at Lisburne, the Fish and Wildlife Service (Office of Ecological Services) and U.S. Geological Survey (ONPRA) jointly study and evaluate the impact, if any, of the activities on the raptors nesting in this valley. Qualified personnel are available in these two offices to conduct the study. Agreement would be needed from the USGS Chief of Operations, ONPRA, and Husky Oil to provide logistics, mainly in the form of a few hours of aircraft support during the period between March 1st and July 15th.

Pat Reynolds

Pat Reynolds
Biological Technician
U.S. Fish and Wildlife
Service, OES

John R. Haugh

John R. Haugh
Environmental Specialist
U.S. Geological Survey,
ONPRA

JRH:jm

cc: C. Livingston
J. Stout

This topographic map depicts the Etroki River area, including the KATEEL RIVER and a RESERVE. The map features contour lines with elevations such as 2290, 2377, 3000, and 3105. Key locations and features include:

- Water Sources:** Several "POSSIBLE WATER SOURCE" and "PROPOSED WATER SOURCE" are marked with sun-like symbols.
- Borrow Sites:** "PRIMARY BORROW SITE NO. 4", "PRIMARY BORROW SITE NO. 1", and "ALTERNATE BORROW SITE NO. 2" are indicated.
- Infrastructure:** "PROPOSED ICE ROAD SUBJECT TO REVISION FOLLOWING ADDITIONAL SURVEYING", "PROPOSED OTTER STRIP", "PROPOSED GRAVEL ROAD", and "IMPROVED WINTER SUBJECT TO REVISION FOLLOWING ADDITIONAL SURVEYING" are shown.
- Geographical Features:** "Etroki Creek", "KATEEL RIVER", and "RESERVE" are labeled. A "BOUNDARY" line is also present.
- Grid System:** The map is overlaid with a grid labeled "R 12 E", "R 13 E", "R 17 W", "R 16 W", "P", and "MERU".

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

September 1, 1978

NORTHERN REGIONAL OFFICE

JAY S. HAMMOND, GOVERNOR

P.O. BOX 1601 - FAIRBANKS 99707

DISTRICT OFFICE
FAIRBANKS, ALASKA

1978 SEP - 7 AM 10:00

RECEIVED
DEPT. OF ENVIRONMENTAL
MANAGEMENT

Mr. John Santora
BLM
P. O. Box 1150
Fairbanks, Alaska 99707

Re: Review of Draft Annual
Plan 78-79

Dear Mr. Santora:

I have reviewed the Draft Annual Plan of Operations for NPR-A 1978-79. My comments on the text are, for the most part, based on operating practices rather than site specific comments. Site specific comments will be addressed by our staff members in their Environmental Assessment preparation. There are some general comments enclosed, based on surface protection concerns, for several of the well site locations.

GENERAL COMMENTS ON PLAN REVIEW

- 1) Comments solicited from other agencies have not been adequately addressed in the draft EIS or past annual plan of operations. The questions and concerns of agencies are merely reputed and appended to the document. When the BLM monitoring reports are reviewed it is readily apparent that there are many unilateral changes made in the Annual Plan by the USGS. A couple of points would be relocation of Tunalik and Inigok airstrips, or the stacking at Husky Point or unauthorized use of the Wolf Creek Camp by the barrel clean-up crew.

Treatment and handling of solid waste, sewage, and oil spills have not followed the procedures set out in the EIS. Questions concerning treatment and handling of these items have been ignored. At this time, under the present circumstances, it is a waste of energy for the various agencies to review this document as whatever they said will be systematically disregarded. However, for the record, I offer the below listed observations and comments on the project.

- 2) There seems to be a general philosophy by some of the DOI that their role in this project is only one of surface protection. They feel that environmentalists should not address engineering

issues of economic values. However, "how does one separate the fingers from the hand?" President Carter has directed the regulatory agencies to consider cost. Point in case again would be Tunalik. BIM was opposed to the project as USGS designed it. Now, after millions of dollars have been spent, the "all weather airstrip" that was so deparately needed is not being used.

We are not trying to tell the USGS how to conduct their geophysical operations, or run their civil engineering program. However, it is possible for non-engineers to point out engineering problems that have environmental consequences. Instead of accepting constructive criticisms, USGS has chosen to disregard the issues and, in many cases, attack the individual by saying "we don't want archeologists making engineering decisions". To sum our example up, one might say that you don't have to be an engineer to see that they probably don't need the multi-million dollar airstrip at Tunalik.

GENERAL COMMENTS ON ENVIRONMENTAL OPERATING PROCEDURES

SOLID WASTE

The State of Alaska Department of Environmental Conservation has the statutory authority and responsibility for solid waste management. 18 AAC 60.130(15) defines solid waste as all unwanted or disregarded solid or semi-solid material whether putrescible or nonputrescible originating from any plastic, rubber, cloth, ashes, litter and street sweepings, dewatered sewage, sludge, dead animals, offal, junked vehicles and equipment material and debris resulting from construction or demolition projects abandoned and decaying structures, hazardous wastes, mine wastes, gravel pit and quarry spoils and overburden except that originating from the construction of single buildings.

There has been a misconception on the part of USGS, Husky and ASAG as to what incineration means; 18 AAC 60.130(4) defines incineration, (5) defines incinerator and (6) defines landfill.

- (4) "incineration" means the process of burning solid, liquid or gaseous combustible wastes to gases and residue, within an incinerator.
- (5) "incinerator" means any equipment, device or contrivance excluding fireplaces and burn barrels, used for the controlled thermal reduction of solid waste.
- (6) "landfill" means a land area used for the disposal of solid waste.

During the 1977-78 field season, contractors were under the impression that "open burn" was synonymous with incineration. This was the general practice for disposal of putrescible garbage and oily waste.

The only incinerator which was routinely used was at Camp Lonely. It was inoperative much of the time, and if it were operational could not have handled the large quantities of garbage and refuse that were brought to Lonely. The incinerator has a capacity of about 175 pounds per hour.

Solid waste from all drill camps was flown back to Lonely for disposal. Husky was continuously directed to maintain the dump as a sanitary landfill and according to their solid waste disposal permit NR 32-77. On numerous occasions, Husky allowed oily wastes, batteries, putrescible garbage, 55 gallon drums and other unauthorized material to be placed in the landfill. On several occasions, fox were observed feeding on "cooked" garbage in the dump. This is in violation of 5 AAC 81.218 which prohibits leaving garbage in a manner that attracts wild animals.

Camp Lonely has a limited area that can be used as a landfill. From both the space conservation and the economics of gravel cover, all debris should be compacted to the maximum.

Both Husky representatives, as well as USGS personnel, have been advised by ADEC to apply for solid waste disposal permits at the drill sites.

The problem of the expensive handling of garbage on and off aircraft, and the environmental concerns would be resolved if there were incinerators at the construction and drill site camps. Ash and inert material could be buried in the camp pads.

Overburden/Rehabilitation

Solid waste also includes overburden and mining wastes. The USGS was directed to supply the ADEC with their mining plans at the 1977-78 construction sites. The USGS has not done this, nor have they submitted the BLM NPR-A project with their plans for reseeding or rehabilitation work at the well sites. Yet, during the summer of 1978, clean-up and restoration attempts at Atigaru and South Simpson were inadequate.

Cats deployed and left at these sites were unable to work because of soft material. Reserve pits were pumped onto the tundra without the approval from the regulatory agency. The BLM should have an active role in this restoration work. Various techniques used in the Canadian arctic, such as stripping and stockpiling tundra, and, prior to site abandonment, pushing the pit walls into reserve ponds and then spreading tundra over this may be a good restoration method in Alaska. In any regard, rather than USGS

unilaterally deciding how to rehabilitate a pad, the BLM and ADEC should be involved. The ADEC again is requesting a mining and restoration plan for all material sites and well sites that will have overburden or spoils.

ENVIRONMENTAL ASSESSMENT REPORT

The EA's need to be completed prior to start-up of field activities so that site-specific stipulations can be addressed. In these reports specific restoration/rehabilitation recommendations should be addressed. Last season several of the well sites were nearly complete before their EA's were finished and, as of August 1978, the EA's for Tunalik and Inigok are not complete.

SEWAGE TREATMENT

The EI's state that sewage effluent will be treated to conform with the State and Federal standards. All greywater discharges of the construction and geophysical camps sampled by the ADEC grossly violated State standards.

Fecal coliforms were greater than 60,000 colonies/100 ml. Both BOD and suspended solids were way beyond standards. The USGS was advised of these results and this situation should be corrected prior to the start-up of field activities.

Drill rigs are using physical-chemical sewage treatment plants. At Inigok (which has a known lake trout fishery), the sewage treatment plant is within 300 feet of the lake; and as of July, effluent did not meet State standards. Effluent is not contained and will eventually get into the lake. Exxon and Texaco have used treated effluent or greywater in their mud programs on the North Slope. The USGS may find this both economical, as well as environmentally acceptable.

WATER USE

In general, several of the sites in the proposed Draft Plan may not have sufficient water available. These include the J. W. Dalton site and, perhaps, Tapaluk. The quality of water from these lakes may be questionable for drinking water.

There also may be little water available for drilling purposes unless a snow/ice melter is utilized on Tapaluk.

Last year at Lonely when the snow melter was used, there were numerous complaints about the poor quality drinking water. Regardless of where drinking water comes from, it needs to meet State standards.

GRAVEL USE

The BLM should not allow permanent "all-weather landing strips" to be built for exploratory purposes for the following reasons:

- 1) The gravel is in limited demand.
- 2) The location of an "all weather" airstrip may not be the ideal location for such a facility in the event a discovery is made and the field developed.
- 3) The impacts of opening the country up have not been addressed.
- 4) Cost benefits of using ice and two-seasons wells will allow most wells to be drilled without the expenditure of gravel or environment impacts of gravel mining operations.
- 5) In certain cases, gravel bars and ridges could be leveled.
- 6) This past years' experience points out that even if "all weather" airstrips are built, they may be unused.
- 7) The Corps of Engineers has the authority under Section 404 of the Federal Water Pollution Control Act of 1972, to require a permit for all gravel, dredge and fill operations. This applies to navigable waters as well as wetlands.

FUEL HANDLING PRACTICES

There have been fuel/oil spills on almost every lake used to off-load fuel. There should be no fuel stored on lake ice or transferred on lake ice unless the transfer is done over an impermeable liner. Clean-up of any fluids should be immediate.

Minor fuel spills were not cleaned up this past season until the BIM and ADEC found and reported several of these spills (even though both Husky and USGS were aware of the spills). At two of these sites minor spills were allowed to accumulate to hundreds of gallons of spilled fuels, and at Liberator Lake several migratory birds were killed by the spilled fuel. The BIM has suggested several fuel handling stipulations which are as follows:

- 1) Dry disconnects are required for all bulk transfer fuel hoses.
- 2) Fuel nozzles will not be left unattended during fueling operations.
- 3) The fuel nozzle trigger will not be wedged, or tied, in an open position.
- 4) The amount of fuel being transferred into a tanker or tank will be metered, or visually inspected, during the fueling operation to prevent overfilling.
- 5) Top off tanks at a reduced volume consistent with temperature to prevent overflow. A stick gauge with float is suggested.
- 6) Have approved pressure relief system on each tank.
- 7) Kinks or short loops in fueling hoses will be avoided.
- 8) Fueling operations will be stopped immediately upon discovering leaks or spillage from the servicing equipment.
- 9) If a fuel spill occurs, initiate clean-up immediately.
- 10) The USGS operator will establish a special oil spill clean-up team to oversee the clean-up of fuel spills, rather than place such responsibility on the busy, untrained and often uninterested construction or seismic personnel.

In three instances at Inigok, Liberator Lake and Kiligwa, there were no subcontractors knowledgeable in clean-up procedures on site. This clean-up crew would also be responsible for reviewing on-site SPCC plans and equipment. At Lonely, for example, the dikes around the 30,000 barrel tanks would only contain 75-80% of the tank volume.

- 11) All fueling personnel shall be advised of the names of the personnel on the oil spill clean-up team, and how to contact them. This contact will be made immediately when fuel is spilled.
- 12) Tandem fueling is prohibited (Example - transferring fuel from one tank vehicle to a second tank vehicle which, in turn, is connected to and is pumping fuel into an aircraft).
- 13) Pumps, either hand or power operated, shall be used when aircraft are fueled from drums. Pouring or gravity flow shall not be permitted.
- 14) No petroleum products are to be open-burned after clean-up without the approval of BLM and Alaska Department of Environmental Conservation.

On numerous occasions the USGS contractor conducted open-hydrocarbon burns without approval of the ADEC. The USGS has been officially notified of incidents at Peard Bay and Lonely.

SURFACE OILING/DUST CONTROL

In general, we are opposed to surface oiling of airstrips, roads, and pads at exploratory camps for dust control. Experience indicates that a large percentage of the oil ends up in the water, or in other non-target areas.

SEISMIC ONE-QUARTER MILE RESTRICTION FROM ANADROMOUS FISH STREAMS

The natives continue to talk about seismic fish kills, the ADF&G complains about the effect of energy waves on White Fish eggs. I realize that the ADF&G have not taken advantage of the USGS offer to conduct seismic fishery impact studies; however, if ADF&G won't do the research, then BLM Resources should, or perhaps the USGS or USF&WS.

TRAPPING, HUNTING AND FISHING

The BLM monitors have observed fishing and trapping in and around the camps. The project manager has the authority to make stipulations prohibiting this. If the BLM doesn't want these activities continuing then they should "post" these areas.

MONITORING

I briefly mention this subject to point out that:

- 1) USGS did not have environmentalists in the field until
1978. When a second (senior) USGS employee

- 2) BLM had monitors in the field 7 days per week. However, according to the BLM USGS MOU, BLM is only observing, not enforcing, environmental stipulations. They are to report violations to USGS. Hopefully, both BLM and USGS will revamp their approach to the monitoring program this upcoming season. Regardless of who does the job, someone has to enforce the stipulations.

GENERAL COMMENTS ON SPECIFIC SITES

TAPKALUK

This island is occasionally inundated with ice. Should the USGS drill this well, how will the rig be protected against the ice? How will drilling muds be disposed of? What precautions will be taken to protect fuel tanks? This location will also require a Corps of Engineers Section 10 permit. Where is the center of the structure, and could this well be relocated?

LISBURNE

If possible, no all-weather Hercules airstrip should be built.

- 1) Past experience illustrates that scheduling problems may be delayed and the runway not needed.
- 2) Gravel is limited in this area and gravel may be better utilized, should oil be produced in this area.
- 3) There may be an adverse effect on falcon/hawks in this area from increased air traffic.
- 4) Should the airstrip be built, it may necessitate a lengthy archeological clearance.
- 5) Should the decision be made to build an all-weather strip, we would prefer that the river bench be used rather than the upland site.
- 6) Of the material sites reviewed on August 29, 1978, we prefer the use of the upland site currently being excavated by the archeological team. In this case, taking all of the material from one location vs mining numerous small gravel bars, would have less effect on habitat.
- 7) This agency is in favor of using ice pads, airstrip and roads when possible. We feel that the use of semi-permanent gravel or sand pads should be minimized.

SOUTH BARROW GAS WELLS

In general, a revegetation program is needed for these sites, as well as those drilled in the past.

PAGE SPECIFIC COMMENTS

Page 32 - In reference to the burning of any hydrocarbons - prior to the open-burning of oil/fuel/grease - authorization is required from the ADEC.

Page 33 - The BLM NPR-A project manager should be notified of all

Mr. Santora

Page Eight

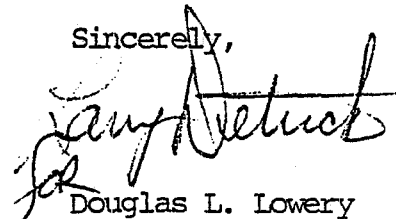
September 1, 1978
Review/Draft Annual Plan

- Page 50 - Will styrofoam or any insulation be used in runway construction?
- Page 69-70 - Travel across the tundra or along the coast to obtain water should be discussed.
- Page 89-90 - Where will the borrow sources for South Barrow gas wells be located?
- Page 103 - The Alaska Department of Environmental Conservation is not aware of any joint planning effort being conducted with ONPRA in regards to the on-going clean-up of NPR-A. They have made several attempts to obtain site-specific information, but have not received the USGS plans. However, they would be pleased to work with the USGS should ONPRA so desire.

Stipulation #17(A-7) All waste water discharges, with the exception of grey water, require a permit and/or plan review from ADEC.

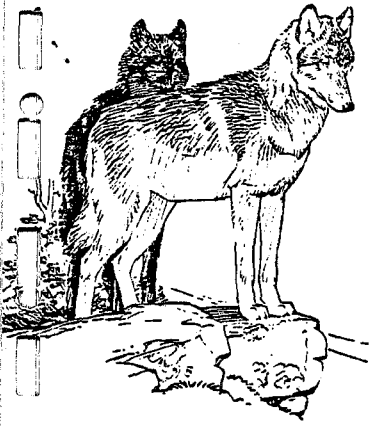
We are pleased to have the opportunity to comment on this document. These comments are meant to be constructive and to point out areas where there is a definite need for improvement.

Sincerely,



Douglas L. Lowery
Reg. Env. Supv.

JB:g



Alaska Conservation Society

Incorporated in 1960

P.O. Box 80192

College Branch, Fairbanks, Alaska 99708

August 15, 1978

United States Dept. of Interior
Bureau of Land Management
Attention: John Santora
Fairbanks District Office
Box 1150
Fairbanks, Alaska 99707

Reference: 2361(290)

Dear Mr. Santora:

I attended the August 14 BLM sponsored meeting on NPRA in Fairbanks. At this meeting Max Brewer described the USGS Draft Annual Plan of Operations for 1978-79 oil and gas exploration in NPRA.

While we have great interest in the plans for NPRA we wish to limit our comments at this time to USGS's proposed plans to survey a "narrow corridor, outside the Reserve, between the summit of Howard Pass and the Noatak River." We have heard this proposal several times: at BLM quarterly meeting on NPRA, again from reviewing the EAR (March 1978) and again today.

As you know, the Alaska Conservation Society has expressed its position on NPRA clearly in a statement first issued in 1974. The Society feels that the most important values of NPRA are surface values for wildlife habitat. We feel that the question of using Howard Pass for oil exploration is very important and that the granting of permission should be based on a full Environmental Impact Statement as this would be a major federal action for several reasons.

Howard Pass is important in the migrations of the caribou. The health of the herd using the Pass is important to the ecological balance of the north slope and to the native peoples living in a great many villages, both in and out of the boundaries of NPRA.

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BLM-NPRA

August 15, 1978

Page Two

Howard Pass is also in a (d)(2) area and before Congress as a proposed wilderness area. It seems to us that BLM has a defined responsibility to protect the lands in the (d)(2) proposals as part of the interim management of (d)(2) lands under their care. We understand that seismic activity is not considered as a casual use and therefore is not permitted under interim management, as per an agreement made between four land management agencies in 1973. Other questions arise when one considers BLM's mandate to protect roadless areas under FLPMA Section 603. The possible precedents that would be established through granting such permission to USGS are serious and therefore should be publically addressed under NEPA in a full impact statement.

Sincerely,

ALASKA CONSERVATION SOCIETY

Robert B. Weeden

for Robert B. Weeden
President



United States Department of the Interior

HERITAGE CONSERVATION AND RECREATION SERVICE

ALASKA AREA OFFICE

ANCHORAGE, ALASKA 99501

1011 E. Tudor, Suite 297

Anchorage, Alaska 99503

Tele: (907) 277-1666

AUG 17 1978

IN REPLY REFER TO:

NPR-A

Memorandum

To: NPR-A Project Leader

From: Area Director

Subject: Draft Annual Plan of Operations, NPR-A,
1978-1979 Season

We have reviewed the subject document as requested by your letter of July 24. Two sites, Carbon No. 1 and Etivluk No. 1, proposed for construction of drilling pads in FY 79 are in the vicinity of two Administration endorsed Wild Rivers. These are the Utukok and Nigu-Etivluk Rivers. The drilling pad for the Carbon site is actually several miles from the Utukok River. As described in the Plan of Operations, the proposed winter C-130 airstrip, although within the proposed Wild River corridor, will not have a major impact on the values which make the Utukok suitable for possible Wild River designation. Although not indicated as such on Figure 21, we assume from the description of the typical drilling program that the proposed Twin Otter strip is also an ice airstrip, and therefore not a major impact on the Wild River proposal. We would appreciate it if you continue to keep this office advised of any significant changes made in the plans for the Carbon site such as relocation of borrow sites, or changing from winter only to all-season operation.

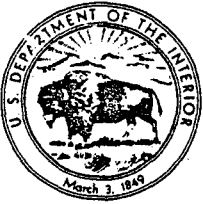
The same general comment applies to the Etivluk site. The Administration's Wild River proposal is for the Nigu River and the Etivluk River below its confluence with the Nigu. The proposed drilling operation does not impact the Wild River proposal. Alternative Borrow Site No. 5 is not on the

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portion of the Etivluk River being considered for designation. However, we want to be advised of significant changes in the plans for this site. Of particular significance is the possibility of constructing an all-season C-130 gravel airstrip in the area (p. 84).

Bill Thomas

Bill Thomas



United States Department of the Interior

FISH AND WILDLIFE SERVICE

ALASKA AREA OFFICE
1011 E. Tudor Road
ANCHORAGE, ALASKA 99503

15 SEP 1978

MEMORANDUM

TO: John Santora, Chief of Operations
Office of National Petroleum Reserve in Alaska
Bureau of Land Management, Fairbanks, Alaska

FROM: Assistant
Area Director, U.S. Fish and Wildlife Service
Anchorage, Alaska

SUBJECT: Draft Annual Plan of Operations
NPR-A 1978-1979

We have made a final review of the National Petroleum Reserve in Alaska Draft Annual Plan of Operations following several weeks of field investigations at proposed well sites and seismic areas. These comments are additions to our comments of August 22, 1978.

GEOPHYSICAL AND GEOLOGICAL INVESTIGATIONS:

Page 4-8: (Seismic activities in the Utukok Special Area): The stipulations should state that no seismic activities will be conducted within the calving grounds after April 30 in order to avoid disturbing pregnant caribou prior to and during calving.

EXPLORATORY DRILLING - GENERAL REMARKS

Page 21: (The use of explosives): Methods and site locations should be reviewed by Bureau of Land Management and/or U.S. Fish and Wildlife Service biologists prior to the use of explosives for obtaining borrow material. No explosives should be used within 1/4 mile of any fish habitat.

Page 24: (Monitors): To increase the efficiency of Monitoring operations, trip reports from all monitors should be made available to all cooperating agencies. We are particularly interested in reviewing the reports.



Save Energy and You Serve America!

John Santora
Fairbanks, Alaska

Page 2

GENERAL COMMENTS: At Inigok well site, fuel lines have been buried beneath gravel to prevent damage from surface traffic. Experience with the Trans-Alaska pipeline showed that buried pipe can rupture in an unstable environment, and then go unnoticed. If buried fuel lines are used, recording meters should be installed at the ends of each line and checked daily to insure that any leaks are detected.

PROPOSED WELL SITES

INIGOK TEST WELL

GENERAL COMMENTS: The lake adjacent to the well site has been utilized this summer for sport fishing by individuals working at or visiting the site. Lakes such as this are known to contain limited populations of very old lake trout. Potential fishermen should be informed of the fragile nature of this fishery to insure the lake is not overharvested.

LISBURNE TEST WELL

Page 50: (All-season airstrip): We recommend that the drilling be done over two winter seasons in order to avoid the environmental costs of building an all-season C-130 airstrip. Air traffic associated with such an airstrip may impact the raptor nesting activities in this valley. Gravel removal required for the airstrip's construction could effect the grayling population in Iteriak Creek.

Like the airstrips at Tunalik and Inigok, this airstrip presumably will be used as a staging area in addition to supporting the drilling program. Long range impact, particularly on nesting raptors is of primary concern. If constructed, its location should be moved to near the center of the valley, as recommended in the memorandum of August 9, 1978, from John Haugh of the U.S. Geological Survey.

Page 50: (Gravel Sources): We recommend that borrow site #1 and alternate borrow site #2 be used prior to utilizing borrow site #4. Removing the volume of gravel required for construction of the airstrip road and well pad from along the creek may cause a change in the hydraulic gradient which would severely impact grayling populations in Iteriak Creek.

John Santora
Fairbanks, Alaska

Page 3

SEABEE TEST WELL

We have no comments on summer drilling at this site.

PEARL TEST WELL

Page 58: (Well site location): The well site is located in a drained lake-basin complex near several small ponds. The site should be relocated so that it is at least 200 yards from the nearest pond as these areas have been shown to be the most valuable wetland habitat for shorebirds and waterfowl. (Bergman et. al., 1977.)

Page 60: (Borrow Sites): Enough material should remain at borrow site #2 after the borrowing operation is complete to allow beach deposition to rebuild the spit. This area is used by caribou for relief from insect harassment. Any gravel removal below the mean higher high water (MHHW) line requires a permit from the U.S. Army Corps of Engineers, under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

TAPKALUK TEST WELL

We are concerned with the possibility of toxic material from the reserve pit contaminating the surrounding ocean and adversely affecting marine organisms. This could occur if the island is scoured by ice or if materials percolate through unfrozen gravel. Drilling muds and other toxic material should be hauled ashore and disposed of in methods acceptable to Alaska Department of Environmental Conservation. Or the material could be buried in a reserve pit lined with an impermeable membrane well below the surface of the island.

J. W. DALTON TEST WELL

We recommend that drilling operations do not occur during summer months because of potential disturbances to waterfowl and anadromous fish. This coastal area consists of extensive waterfowl habitat utilized by nesting birds. The Smith River contains arctic char, least cisco and probably other fish species. Also a winter drilling operation would require less gravel, as an ice pad or thinner gravel pad could be constructed.

John Santora
Fairbanks, Alaska

Page 4

If summer drilling is mandatory, the use of culverts to cross the Smith River is not acceptable due to the dynamics of this river mouth and beach-spit complex. Also the installation of culverts would require permits from the U.S. Army Corps of Engineers under both Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Federal Water Pollution Control Act Amendments. A bailey bridge is a feasible alternative. Another alternative is to relocate the well site to the west side of the Smith River.

Page 68: (Material Sources): A narrow section of beach should be left following removal of gravel from borrow sites to enhance deposition in these areas. Any gravel removal below the mean higher high water (MHHW) line will require a permit from the U.S. Army Corps of Engineers, under Section 10 of the Rivers and Harbors Act of 1899.

CARBON TEST WELL

We recommend that this well site is not used. The site is located in critical habitat for the western arctic caribou herd. The calving grounds of the herd is a large area, designated by law as the Utukok Special Area. But a majority of caribou give birth in a relatively small portion of this area. The well site is located within this core calving area.

The western arctic herd has already suffered a major population decline between 1970 and 1976. Population numbers are recovering very slowly. Recent work by Cameron and Whitter (Alaska Department of Fish and Game, in press) shows that caribou cows and calves are particularly sensitive to disturbance, such as occurred during construction and maintenance of the Trans-Alaska pipeline. Disturbance of the most vulnerable and essential segment of the caribou population is likely if exploration activities occur in this area.

If this well site is used, stipulations should state that no exploration activities, including surveying, rig moves, construction or drilling will be allowed between April 30 and June 30. Drilling is projected to begin in the fall of 1979. Presumably as many as 200 days will be required to complete this 15,000 foot well. All activities must cease prior to April 30 even if the well has to be shut down for the summer.

Page 71: (Airstrip): There are few details concerning construction of the C-130 airstrip for the Carbon site, but we have been verbally informed by John Haugh of USGS that an ice strip will be built this winter. We are opposed to the construction of an all-season C-130 strip either this winter or prior to the onset of the drilling operation in 1979-1980 because of the potential for long range impact on the western arctic caribou herd. Ice strips should be used.

Page 73: (Additional studies): We would like to know the results of the additional studies made in this area to insure maximum protection of this sensitive area.

OTHER SITES

We have been verbally informed by John Haugh that the Kungok, Kigalik and Etivluk pads will probably not be built this winter. If plans for these areas are being reconsidered please inform us as soon as possible.

Page 84: (Etivluk all-season C-130 airstrip): If this site is utilized, we would oppose the construction of an all-season C-130 airstrip because of serious potential for long term impact to the foothills environment. Serious consideration should be given to utilizing helicopters and/or rolligons to transport supplies from the ice strip at Lake Betty or the all-weather strip proposed for construction at the Lisburne well site.

BARROW GAS FIELDS

Page 95: (Road construction): We concur that completion of the road between the Naval Arctic Research Laboratory (NARL) and the gas field is important when a suitable source of gravel is obtained. We oppose removal of gravel from barrier islands or coastal spits in the Beaufort Sea. Also any gravel removal below the mean higher high water line will require a permit from the U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

The location of the road should avoid ponds within drained lake basins and should have adequate culverts to insure natural drainage.

John Santora
Fairbanks, Alaska

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STIPULATIONS - APPENDIX A and B

Page A-2; Page B-2: (Operation of vehicles on tundra): Recent observations of areas traversed by last winter's seismic operations showed that the most serious damage was done to dry tussock areas and riparian willows by cat trains moving seismic support camps. Because these areas are relatively small compared to total available habitat, the damage has no significant effect on wildlife habitat. However, crushed tussocks and broken willows leave obvious trails which create an unaesthetic visual impact. As the final land use has not been determined for NPR-A, surface resources should be left as intact as possible. Damage to tussocks is impossible to avoid, but willow stands are less frequently encountered and some may be avoided by cat trains if care is taken in selecting routes.

Page A-4; Page B-5: (Operations near denning bears): Surveys should be made by a BLM biologist between September 15 and October 15 to look for grizzly bear dens near the Lisburne well site and in areas to be traversed by seismic crews. If any dens are located within 1/2 mile of seismic activities, observations of the den should be made by a biological monitor during periods of potential disturbances. Accommodations at seismic camps should be provided for the biologist during observational periods. Sightings of polar bears or grizzly bears by any individual during the period September 15-April 1 should be reported to your office.

Page A-5; B-5: (Fuel spills): Numerous small fuel spills inevitably occur during refueling operations on winter ice strips. As these accumulate, fairly large quantities of fuel are released into lakes during break-up. We recommend all aircraft be refueled over a shallow depression in the ice covered with steel matting and lined with an impermeable membrane. This would hold all small spills until they can be absorbed by sorbents or pumped up and disposed of by burning or other acceptable methods.

Page A-6: (Foreign debris on shot lines): Debris to be picked up along shot lines should include all stakes and discarded drill bits. A recent survey of some seismic lines shot last winter showed that stakes had been left at most shot holes. Discarded drill

John Santora
Fairbanks, Alaska

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bits were found at 50 percent of the shot holes observed on the ground. More care should be taken in returning cuttings to the hole. Shot holes observed were surrounded by a circle of dirt, about 10 feet in diameter and 4 to 12 inches in depth.

Field work on the biological assessments of proposed well sites was a successful cooperative effort by individuals from USGS, BLM and USFWS. But more work could have been accomplished if the level of helicopter support by USGS for biological programs had been as extensive as that provided to archaeological and vegetation studies. Dependence on space-available aircraft was not feasible.

We emphasize the need for a continued strong year-round biological surveillance program of on-going exploration activities in NPR-A. Our Northern Alaska Ecological Services field office staff in Fairbanks is willing to assist your staff throughout the winter in monitoring and in planning early for the 1979 field evaluations.

Please inform us of any major changes to the proposed Plan of Operations, particularly modifications made as a result of these comments or comments submitted by other agencies.

Darryl L. Hickman



United States Department of the Interior

FISH AND WILDLIFE SERVICE

ALASKA AREA OFFICE
1011 E. Tudor Road
ANCHORAGE, ALASKA 99503
August 22, 1978

MEMORANDUM

TO: John Santora, Chief of Operations
Office of National Petroleum Reserve in Alaska
Bureau of Land Management, Fairbanks, Alaska

FROM: Assistant
Area Director, U.S. Fish and Wildlife Service
Anchorage, Alaska

SUBJECT: Draft Annual Plan of Operations, NPR-A, 1978-1979

We have reviewed the draft Annual Plan of Operations, National Petroleum Reserve in Alaska, 1978-1979 Season, which we received on July 25, 1978. Service biologists, in cooperation with your staff, are currently in the field engaged in biological surveys of the well sites discussed in this draft. Therefore, these comments are preliminary and will be followed by more detailed comments upon completion of the field work.

General Comments:

Our Northern Alaska Ecological Services (NAES) field office in Fairbanks has been working closely with you since early spring to develop and implement biological studies of the proposed well sites. Yet, the late availability of the draft Annual Plan inhibits effective review and consideration of all biological resources which may be affected by the drilling and related programs. Of all the disciplines which must be considered in this dynamic program it appears that surface protection of the Reserve is relegated to a back-seat position to the geological and engineering aspects of the exploration program. This situation could perhaps be remedied by (1) accelerated publication of the Plan of Operations, or early availability of rough drafts to cooperating agencies and (2) the requirement that the individual environmental assessments for well sites and other activities be completed and published prior to construction or drilling at those sites. Also, we suggest that the channels of communication with the NAES field office be further developed so that any significant deviations by USGS or contractors from the Plan of Operations or Environmental Assessments be coordinated with and reviewed



Save Energy and You Serve America!

John Santora
Fairbanks, Alaska

Page 2

by the Fish and Wildlife Service. For example, the Inigok well environmental analysis was never published, yet this site is now a year-round drilling project with a permanent airstrip. It has a serious potential for adversely affecting the environment, especially since the pad was placed much closer to the double lake system than originally indicated in the 1977-78 draft Annual Plan of Operations. The NAES field office is prepared to work closely with BLM and USGS to see that this coming year's operations are conducted with environmental care.

Specific Comments:

Geophysical and Geological Investigations:

The proposed seismic operations south of Howard Pass into the proposed Noatak National Ecological Preserve would not qualify as a casual use of D-2 lands. As interim land manager for this area outside of NPR-A, we presume your agency would not issue the required Special Use Permit for the Howard Pass seismic doublet without approval of the Secretary's office. If the vibroseis technique is used early enough in the season (no later than March 15) to prevent harassment of caribou, waterfowl and birds of prey of migrating through the pass, we have no biological objections to this proposed operation. A supplement to the Environmental Assessment published last year for this area should be prepared to describe the impacts of this new technique and to fully discuss the controversy of this action.

We are concerned about the seismic program through the Utukok Special Area. Work in this area should be completed as early as possible. We will coordinate with Alaska Department of Fish and Game biologists to recommend the latest date for work in this area.

Observations by Service biologists of last winter's seismic lines showed unnecessary damage to riverine willow stands. Surveys to be conducted this month by our staff may supply additional information on the impact of seismic activity on tundra vegetation. However, we feel that stronger protection should be afforded to willow stands as they are known to be important wildlife habitat areas and are protected under stipulations for winter seismic and road building activities.

John Santora
Fairbanks, Alaska

Page 3

We suggest that Alaska Department Fish and Game biologists be contacted prior to any seismic activities to map known bear dens and to implement a system for locating unknown bear denning sites along seismic lines. This will allow seismic crews to avoid disturbing denning bears, as is stipulated in the plan of operations.

The helicopter-transported magnetic survey should not be employed in mountainous terrain after August 10 to avoid interference with Dall sheep hunters.

Drilling Program:

Page 20, Line 18; and Lisburne Test Well No. 1: We strongly recommend that any all-season gravel airstrip be deactivated upon completion of the drilling program, and suggest that plans for this be included in the environmental analysis for the well site involved. Further, because of their far greater impact on the surface environment, we ask that the need for all-season drilling be reconsidered, and all alternatives receive serious consideration. We concur fully with the August 9, 1978 memorandum (copy attached) of John Haugh of your staff and Pat Reynolds of our NAES field office, subject, Recommendations for changes at Lisburne site.

Seabee Test Well No. 1: No comments until field observations are completed.

Peard Test Well No. 1: No comments until field observations are completed.

Tapkaluk Test Well No. 1: This island may be subjected to periodic ice shoves-pressure ridges of ice which can inundate land masses within a matter of hours. Such an ice shove occurred on Tapkaluk Island during the winter of 1977-78, with ice piling as high as 35 feet during this shove. This presents a potential hazard to the well site and camp unless preventative measures are taken. There is also a question of the permeability of the soil at the level to which the reserve pit is to be dug, with indications of a deep or no permafrost layer. We suggest that further tests be made prior to the final decision selecting this site. We are further concerned about use of this site because it is a barrier island. Barrier islands in the Beaufort Sea and the protected lagoons behind them are of tremendous biological importance. Our Service strongly objects to the use of barrier island as material sources, and we are currently evaluating their compatibility as drilling platforms. We suggest that this well be moved to a site onshore.

John Santora
Fairbanks, Alaska

Page 4

J. W. Dalton Test Well No. 1: The proposed summer drilling at this shallow well would be a major deviation from the primary winter exploration of NPR-A. Considering the well's relatively shallow depth, we question whether increased disturbance of biological resources during the productive summer months is worth the risk. We will comment more specifically on timing, borrow sites and access on completion of field investigations.

Carbon Test Well No. 1: This site is situated in the core calving area of the Western Arctic caribou herd in the Utukok Special Area. We suggest that the same timing precautions be observed here as for the seismic program in this area. We will have more detailed comments on possible impacts to the Western Arctic Caribou herd and the Utukok River and recommended timing of operations following our field investigation and discussions with biologists of the Alaska Department of Fish and Game.

Kungok Test Well No. 1: No comments until field observations are completed.

Kigalik Test Well No. 1: No comments until field observations are completed.

Etivluk Test Well No. 1: No comments until field observations are completed.

Barrow Natural Gas Field Development: We recommend that a complete Environmental Assessment be developed if this project is funded by Congress. We are strongly opposed to gravel removal from Cooper or any other barrier island for road or pad construction.

Stipulations Concerning Winter Seismic Operations and Road and Trail Construction: Damage to snow-free tundra areas has been reported from last year's operations in the foothills, indicating that the spring close-down of seismic operations needs to be more closely monitored. Upon completion of our survey of sites near Driftwood this fall we will provide further recommendations on this subject.

An additional stipulation regarding refueling operations on ice air-strips is called for in view of the several minor fuel spills which occurred this spring. A thorough sweeping or scraping to remove fuel soaked material at refueling zones should occur periodically during use

John Santora
Fairbanks, Alaska

Page 5

and at closedown of camps and wellsites. Also, lakes used as airstrips should be closely monitored during breakup by personnel experienced in oil spill containment measures. Supplies of containment materials should be stocked at such sites until breakup is complete.

Rather than restricting our comments to these pages, our NAES field office staff in Fairbanks is willing to work cooperatively with your office and with USGS to insure that the petroleum exploration of the NPRA is conducted with the spirit of surface protection expressed in PL 94-258. Please do not hesitate to call on the Fish and Wildlife Service.

Harry L. Hickman

LAW OFFICES OF
ALASKA LEGAL SERVICES CORPORATION

P. O. BOX 309
BARROW, ALASKA 99723

TELEPHONE ~~852-2311~~ 852-2311

September 17, 1978

RECEIVED
FEDERAL BUREAU OF INVESTIGATION
SEP 17 11:00 AM '78
FBI - BARROW, ALASKA

Mr. John Santora
BLM/NPR-A Project Manager
P.O. Box 1150
Fairbanks, Alaska 99701

Re: NPR-A Draft Annual Plan of Operations

Dear Mr. Santora:

Time is very short now for developing adequate plans for this winter's drilling on the National Petroleum Reserve. In our phone conversation today you stated that the Annual Plan must be ready before the work begins about November 1, 1978. I appreciate your continued willingness to review comments on the proposed Annual Plan.

The drilling sites proposed by the Draft Annual Plan threaten many important areas for wildlife that people on the North Slope depend on for subsistence hunting, and some endangered species which have received national and even international concern for their preservation. The Draft Annual Plan simply fails to address these dangers, failing to include special stipulations or alternate drilling sites that would be necessary to protect these species of wildlife. In addition, although some effort has been made to consult Barrow people, almost no effort has yet been made to consult in a timely way with the villages affected by the proposed exploratory drilling. Unless these problems are solved in the next two months, the Bureau of Land Management and the U.S. Geological Survey will be violating the NPR-A Act (P.L. 94-258 § 104(b)), 43 CFR §2361.1, and the BLM-GS NPR-A Memorandum of Understanding (effective 1/18/77).

1. The Critical Drill Sites:

At least seven (7) of the drilling sites proposed outside of the South Barrow Gas Field cause important threats to the environment. Since there are only a total of thirteen (13) drilling sites proposed outside the Gas Field, it is clear that a lot of work needs yet to be done in drafting the Annual Plan for this year. This discussion should not be taken to mean that these are the only questionable drilling sites proposed--these are simply the ones that have been brought to my attention up to now. The other sites may also bring similar problems.

a. Ikpikpuk Test Well No. 1 (Sec. 25, T 13N, R 10W). This well is located in the Teshekpuk Lake Special Area (see NPR-A Designation of Special Areas, Federal Register, Vol. 42, No. 107, 6/3/77, p. 28723). which has been set up to protect the "important nesting, staging, and molting habitat for a large number of ducks, geese, and swans" (*ibid.*) The proposed well is located near important fishing areas for North Slope

Mr. John Santora
September 7, 1978
Page Two

residents.

b. Lisburne Test Well No. 1 (Sec. 13, T 11S, R 17W). This well is a deep exploratory well in the foothills of the Brooks Range, near the northern edge of Howard Pass. These foothills have already been identified as an important area for wildlife, especially the caribou, by the NPR-A 105(c) study. I am informed that Howard Pass is an important migration route for the Western Arctic Caribou herd. The Final EIS recognizes the use of such passes for the passage of the caribou to the winter range to the South (Final EIS, Continuing Exploration and Evaluation of NPR No. 4, 27 May, 1977, p. 591).

c. Seabee Test Well No. 1 (Sec. 5, T 1S, R 1W). This well is proposed for a site within the Colville River Special Area. As stated in the Designation, "the central Colville River and some of its tributaries provide critical nesting habitat for the Arctic peregrine falcon, an endangered species. The bluffs and cliffs along the Colville River provide nesting sites with the adjacent areas being utilized as food hunting areas. The area is currently being considered for nomination as Critical Habitat pursuant to Section 7 of the Endangered Species Act." (emph. supplied). This well would be located in one of the falcon's feeding areas, and would affect the habitat of this endangered species.

d. Peard Test Well No. 1 (Sec. 25, T 16N, R 28W). This well is proposed for an area near Wainwright village which is reported to be important for subsistence hunting and trapping. The Bay itself is important to beluga hunting; fox, polar bears, and other mammals are hunted in the area. The people of Wainwright could best express their concerns for this area, but no meeting has yet been held with them about the well.

e. Tap (Tapkaluk) Test Well No. 1 (T 23N, R 16W). This well is planned for one of the Plover Islands, a small barrier island several miles off shore, bordering the Elson Lagoon east of Barrow. This area has already been identified as a critical environmental area by the 105 (c) study. The Plover Islands have been studied a great deal as bird nesting areas. The lagoon is reported to be an important fish overwintering area. In the winter, during the time of proposed drilling, polar bears den in the areas, and subsistence hunting of seals and other mammals is carried on by people from Barrow. Barrow whaling captains confirm that in the fall, the bowhead whale, an endangered species, migrates close to these islands on the way to Point Barrow. The noise and pollution from the drilling, and especially the danger of an oil blowout so far off shore, threaten the habitat of the bowhead whale, and it would affect the habitat of this endangered species in violation of the Endangered Species Act.

f. J.W. Dalton Test Well No. 1 (Sec. 11, T 18N, R 5W). This well is planned for the Pitt Point area on the Beaufort Sea coast. There are several native allotments and subsistence use sites in the area. The well site is located in the Teshekpuk Lake Special Area (see description at a., above).

Mr. John Santora
September 7, 1978
Page Three

g. Carbon Test Well No. 1 (Sec. 31, T 2N, R 29W). This proposed well is located near the Utukok River. A deep well is proposed, and only the pad would be built this year, according to the Draft Annual Plan. The site is located in the Utukok River Uplands Special Area, which "contains critical habitat for caribou. The critical decline in the population of the western Arctic caribou herd (from 70,000 in 1975 to 35,000 in 1976) necessitates maximum protection for this area, which is ordinarily the calving territory for this herd." (see DOI Designation, cited above). So not only would this well be placed in the calving area, it would be a two season well thereby threatening disturbances to the calving by the presence of the oil rig, even when the drilling may have been stopped temporarily. The Designation, however, assures us that "the integrity of this area will be maintained during the entire year." (emph. supplied).

h. Etivluk Test Well No. 1 (Alternate Pad Only) (Sec. 17, & 21s, R 21W). The problems of this proposed site are even greater than those with the Lisburne site discussed at "b." above, since the Etivluk site is immediately at the northern end of Howard Pass. Should development proceed here, the caribou migration could easily be disturbed, especially for the mothers with calves proceeding to the southern winter ranges.

2. Specific Problems with the Draft Annual Plan:

Once again, this discussion only suggests some of the major problems. Others may well be discovered later.

The standards for preparation of the Draft Annual Plan are stated in the Memorandum of Understanding (MOU) between BLM and the USGS, as set forth in the Final EIS at Appendix C. These standards require, among other things:

- (10) Plans for restoration and rehabilitation of the surface....
- (12) Any standard or special applicable stipulations to be imposed. (emph. supplied).

The Draft Plan only includes an Appendix of the general stipulations for "Winter Seismic and Related Geophysical Operations" in NPR-A. There is no attempt to meet the specific problems presented by each of these drill sites listed above. In no case are the plans for "restoration and rehabilitation of the surface" set forth. Only in the case of the Carbon Test Well are any special stipulations set forth. And at the Carbon site, a promise is made that operations will not actually be carried forward in the calving season. Vague mention is made that "additional studies" are being made for other special operating methods for this site.

But should not those studies already be complete? And all of the proposed drilling sites listed above--and perhaps others--require the same kind of individual attention to the detailed problems at each site. Two of the proposed sites will apparently affect the habitat of the endangered Arctic peregrine falcon or the endangered bowhead whale; the hasty plans to continue drilling in these locations violates the consultation provisions of the Endangered Species Act, and the Act may well prohibit any drilling activity at these two sites (noted at c. & e. above)

Mr. John Santora
September 7, 1978
Page Four

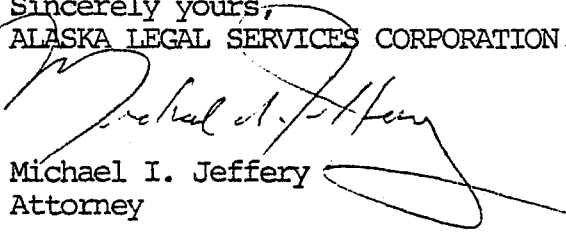
The MOU also calls for "an intensive cultural resources inventory" which "must be conducted on those sites and alternative sites identified for exploration operations that involve surface disturbing activities". (Final EIS, p. C-13). The Draft Annual Plan contains only general comments that "Archeological clearance has been received" or, "archeological investigation will be made" of the proposed areas. (Plan, p. 73, emph. supplied). This archeological investigation is needed, but it is not enough to cover the total cultural resources that may be harmed by the drilling. Have such studies been done for each proposed site? Where are they? Do they include subsistence values as well?

Consultation with the "affected village corporations as appropriate, and other Native communities through the North Slope Borough" is also required by the MOU (Final EIS, p. C-16 & C-23) as well as 43 CFR §2361.1 (e) (1). After contact with the North Slope Borough Environmental Protection Office, you have begun to make arrangements for these village meetings. But these meetings are coming very late, and the USGS representatives will have to join with BLM representatives to listen very carefully to what these village experts have to say. At the very least, the communities of Wainwright, Atkasuk, and Point Lay will be directly affected by the proposed activities, along with the people of Barrow.

Well, these comments have gotten pretty long. The point is simply that the activities proposed for this winter, only a few weeks away, threaten the major food sources of the Arctic: the whales, caribou, fish, birds, and sea mammals. All this at a time when new quota restrictions and new proposals for Outer Continental Shelf Oil drilling are threatening these same resources and the ability of the people of the North Slope to continue subsistence hunting. Since the NPR-A program is being directly administered by the Federal Government, the trust responsibility to the native people of the Arctic, and the responsibility to protect endangered wildlife as set forth in the Endangered Species Act, are especially high.

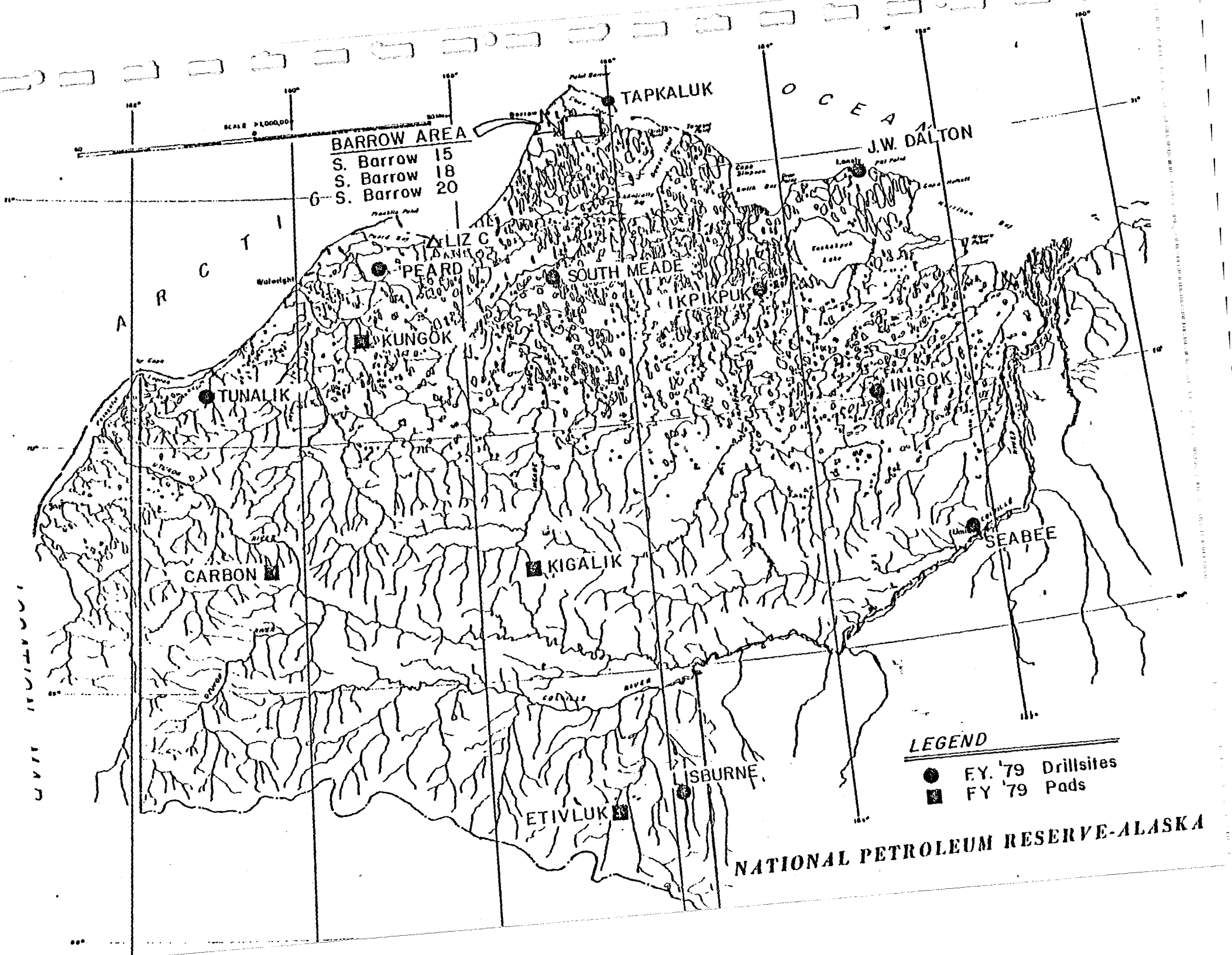
The time remaining before the winter season is very, very short. To meet the responsibilities for surface protection for the NPR-A program for this year, the Bureau of Land Management has a very great deal of work left to do.

Sincerely yours,
ALASKA LEGAL SERVICES CORPORATION


Michael I. Jeffery
Attorney

Attachment: Location Map, Draft Annual Plan, p. 13.

cc. Hon. Eben Hopson, Mayor, North Slope Borough
Hon. Nate Olemaun, Mayor, Barrow
Hon. George Agnasagga, Mayor, Wainwright
Hon. Amos Agnasagga, Mayor, Point Lay
Hon. Margaret Ahngasuk, President, Atkasuk Corporation



September 8, 1978

Marsh Zellhoefer, Wildlife Biologist, Northern Alaska Ecological
Services, USFWS, Fairbanks
NPR-A 1978-79 Well Site Biological Assessments - BIRD SURVEYS

NPR-A Files

From June 22 to 29, 1978, I surveyed proposed FY 79 well sites in NPR-A for bird and animal use and habitat type. I worked by myself from the Lake Betty camp and traveled with the surveying crew in a Bell 206 helicopter on a space available basis. Two well sites were actually visited on the ground: Kigalik and Lisburne Ridge. Other areas were overflowed and sites were inspected on the ground where the surveying crew was working. Qualitative observations of animals present, sign, and habitat were made at each site. This information cannot be considered a comprehensive analysis of bird use in these areas. Opportunity for a thorough bird survey was not available due to the lack of available transportation.

The following pages summarize my observations at well sites and other areas for this time period.



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

John Haugh

National Petroleum Reserve in Alaska
2525 'C' Street - Suite 400
Anchorage, Alaska 99503

O&G/P/A
JH:kw
1 Sept 78

Mr. Gary L. Hickman,
Assistant Area Director
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503.

Dear Mr. Hickman:

Thank you for your comments on the Draft Annual Plan of Operations, National Petroleum Reserve in Alaska, 1978-1979, which were forwarded to this office by the Bureau of Land Management. Although we will be responding in the near future to comments provided by various groups and government agencies, we would, at this time, like to request additional information from you regarding your comments relative to winter seismic operations and road trail construction. I refer specifically to your report of damages to snow free tundra areas in the foothills and the need for more close monitoring of spring close-down of seismic operations.

We would like to investigate these areas you termed as damaged before they are covered with snow to help us avoid any such problems in next winter's operations. We would, therefore, appreciate your providing this office with more detailed information on the kinds of damage that occurred, and specific site locations of these disturbances.

Sincerely,

Max C. Brewer

Max C. Brewer
Chief of Operations

cc: John Haugh 
John Schindler

ETIVLUK DISCUSSION:

A thorough survey of this well site was not accomplished, but a brief look at the area indicates possible extensive use of nearby bluffs and cliffs by raptors. A reported nesting falcon in 1977 was located within one mile of the proposed well site (R. Ritchie, USFWS).

This site requires a thorough survey prior to any activity occurring.

AREA: Lisburne Ridge well and Vicinity

SITE	SPECIES	HABITAT	METHOD	NOTES
Well site	Birds 2 Lapland longspur (nesting) 1 long-tailed jaeger ptarmigan (sign) Mammals caribou (sign)	Moist sedge tussock/ shrub tundra	20 minutes ground observation 24 June	Photos R 15-24A
Site #2	Raptor nest	Gravel and rock banks 30' high	Aerial observation during helicopter flyby, 24 June	Nest seen at a glance; no birds seen. Photos R 19,20 show bluff from well site.
Site #3	Raptor use	Extensive bluffs and talus, rocky out- crops with orange lichen deposits; also rock chimneys	Aerial observation during helicopter flyby, 24 June	Signs of high raptor use. Photos R 20,21 from well site
Ivotuk Hills	Raptor use	Gravel and rock escarpment	Observation from well site with spotting scope, 24 June	Good potential for raptor use. Photo R24A

RECEIVED
BUREAU OF LAND MANAGEMENT
1978 SEP 13 AM 10:00
DISTRICT OFFICE
FAIRBANKS, ALASKA

PHOTO NAME X

PROJECT NPRA

PHOTO # X

OBSERVER ZELLHOEFER

SITE # LISBURNE WELL

WEATHER Partly cloudy, 45°F, wind N15mph

MAP # KILLIK RIVER QUAD

DATE 24 June 1978

	% COVER	HT(m)	DBH(cm)	DBT(m)	Heterogeneity
OVERSTORY					
UNDERSTORY					
GROUND COVER					
cottongrass tussocks	50	0.2			
moss	40				
dwarf birch	2				
willow	occ				
Labrador tea	occ				
Dryas	occ				
Cassiope	1				
lowbush cranberry	1				

ASPECT X

SOIL X

SLOPE X

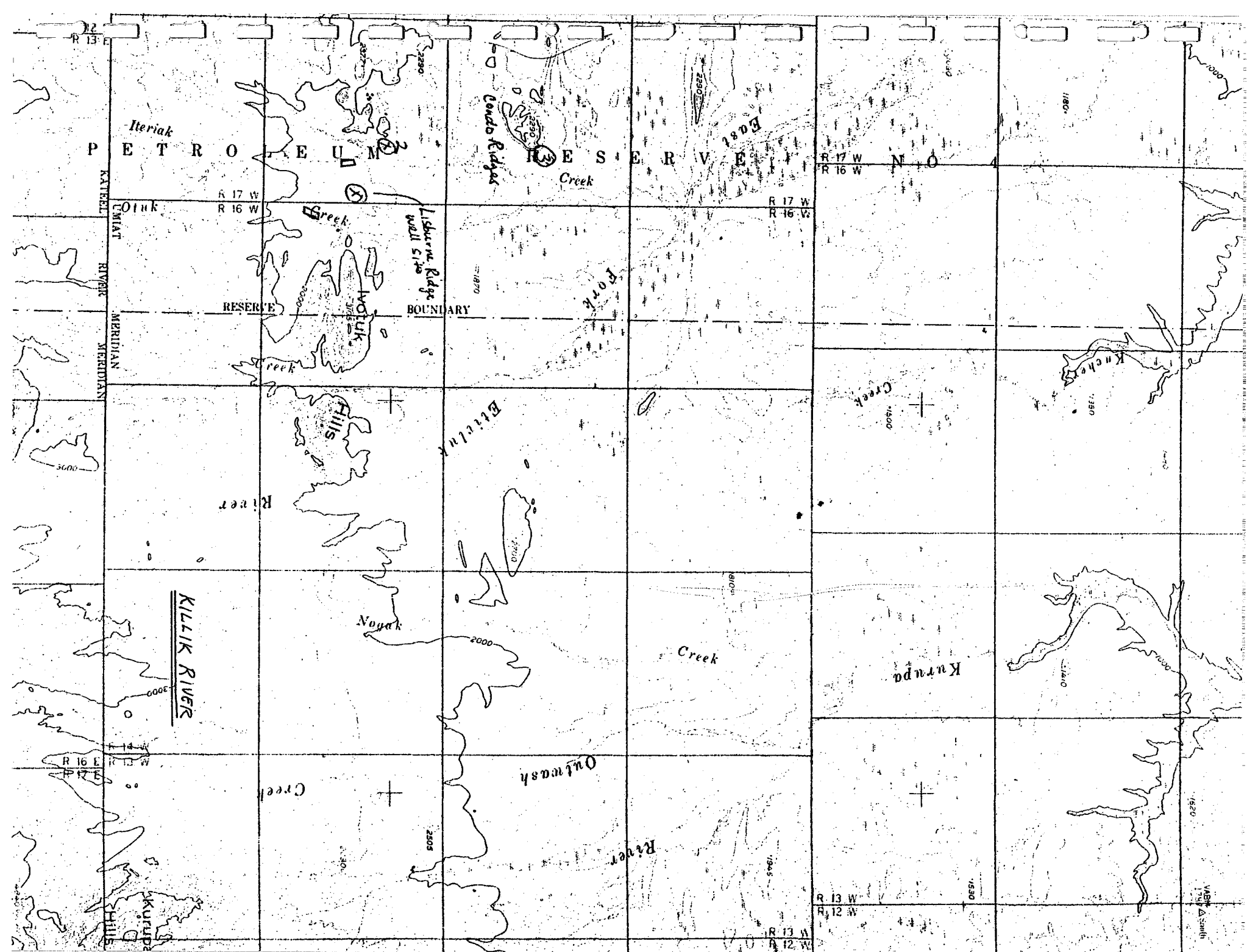
VEGETATION CLASS tundra

PHOTOS K II, Roll R
#14-24

tussock tundra
sedge tussock/shrub

Lapland longspurs
Jaeger
nearby unused raptor nest

Raptor Factor: II



LISBURNE RIDGE DISCUSSION:

A raptor nest at Site #2 (Killik River quad) and evidenced of raptor use at Site #3 and possibly the Ivotuk Hills may be a concern in placement of the all season herc strip. A more detailed inspection is necessary to determine species and extent of use in the area. The herc strip should not be located near the sighted nest unless there is no other alternative.

AREA: Kigalik Well and Vicinity

SITE	SPECIES	HABITAT	METHOD	NOTES
Well site	Birds 10 Lapland longspur (nesting) 1 long-tailed jaeger (hunting) ptarmigan (sign) Mammals caribou (sign) 10 caribou nearby	Sedge tussock/shrub tundra	20 minutes ground observations, 27 June	Photos T 9-15
Site #21	Birds Lapland longspur, 2 pair/ac (nesting) 1 golden plover (nesting) 1 jaeger (hunting) 1 golden eagle (hunting)	Sedge tussock/shrub tundra, with some exposed rocks	15 minutes ground observations, 27 June	Photos T 17-19, U 1-5
VABM Pant	Birds 12 Lapland longspur(nesting) 2 long-tailed jaegers (hunting) ptarmigan (sign) Mammals fox (sign)	Sedge tussock/shrub tundra, with exposed rock strips	20 minutes ground observations, 26 June	Photos S 9-11

PHOTO NAME X

PROJECT NPRA

PHOTO # X

OBSERVER ZELLHOEFER

SITE # KIGALIK WELL

WEATHER Partly cloudy, 50°F, wind light from SE

MAP # LOOKOUT RIDGE

DATE 27 June 1978

	% COVER	HT(m)	DBH(cm)	DBT(m)	Heterogeneity
OVERSTORY					
UNDERSTORY					
GROUND COVER					
cottongrass tussocks	35	7 in.	10 in.		well mixed
moss					
lowbush cranberry	15				
dwarf birch	15				
Cassiope	5				
willow	1				
bare ground (frost heaves)	5				

ASPECT Northwest

SOIL _____

SLOPE 2°

VEGETATION CLASS tundra

PHOTOS K II, Roll T
#9-13

tussock tundra
sedge tussock/shrub

10 Lapland longspur
1 long-tailed jaeger
ptarmigan sign
caribou sign

Raptor Factor: 0

PHOTO NAME X

PROJECT NPRA

PHOTO # X

OBSERVER ZELLHOEFER

SITE # VABM PANT

WEATHER Cloudy, blowing snow, wind N15mph

MAP # LOOKOUT RIDGE QUAD

DATE 27 June 1978

	COVER	HT(m)	DBH(cm)	DBT(m)	Heterogeneity
OVERSTORY					
UNDERSTORY					
GROUND COVER					
cottongrass tussocks	35-40				evenly spaced
Labrador tea	2				
Cassiope	2				
lowbush cranberry	5				
moss	50				
arctic willow	5				
soil exposed	2				

ASPECT North

SOIL _____

SLOPE 2°

VEGETATION CLASS tundra

PHOTOS Ekt, Roll S
#9-11

tussock tundra
sedge tussock/shrub

Central ridge, rocky with lichens

12 Lapland longspurs
2 long-tailed jaegers hunting

Raptor Factor: 0

KIGALIK DISCUSSION:

This well site is in the middle of the rolling foothills. There is no significant raptor nesting habitat in the vicinity, and no other bird problems.

Area: Various near Betty Lake (Howard Pass quad)

SITE	SPECIES	HABITAT	METHOD	NOTES
North				
Puvakrat Mtn.		Gravel and rocky ridges	Overflight, 24 June, and spotting scope from Lisburne Ridge	Little raptor use. Photos R 6-10
Lisburne Ridge	Birds 2 snow bunting ptarmigan (sign)	Talus slope	30 minutes ground observation, 24 June	Photos R 13, U 17
Site #2		Horseshoe shaped ridge with rock outcrops	Spotting scope from Lisburne Ridge, 24 June	Extensive orange lichen deposits. Photos R 4.
Razorback Ridge		Ridges with rock outcrops	Spotting scope from Lisburne Ridge, 24 June.	Some orange lichen deposits. Photo R 3
Site #7	Birds Lapland longspurs snow bunting ptarmigan (sign)	Low, well vegetated ridge, mainly Dryas	20 minutes ground observation, 24 June	
Betty Lake	7 canada geese	Lake	Overflight, 24 June	Photo V 1
SOUTH				
Site #12	2 ptarmigan song sparrows common snipe (heard)	Sedge tussock/shrub tundra	10 minutes ground observation, 25 June	Photo S 6
Site #14	savannah sparrows	Sedge tussock/shrub tundra	10 minutes ground observation, 25 June	
Site #15	1 common snipe 1 jaeger (heard)	Willow shrub with sedge understory	10 minutes ground observation, 25 June	Photos S 8
Banjo Lk.	10 canada geese	Lake	Overflight 26 June	

PHOTO NAME X

PROJECT NPRA

PHOTO # X

OBSERVER ZELLHOEFER

SITE # 04 LISBURNE RIDGE

WEATHER Partly cloudy, wind N30mph

MAP # HOWARD PASS QUAD

DATE 24 June 1978

	COVER	HT(m)	DBH(cm)	DBT(m)	Heterogeneity
OVERSTORY					
UNDERSTORY					
GROUND COVER					
dark green moss	1				
yellow moss	1				
black lichen	1				

ASPECT S

SOIL _____

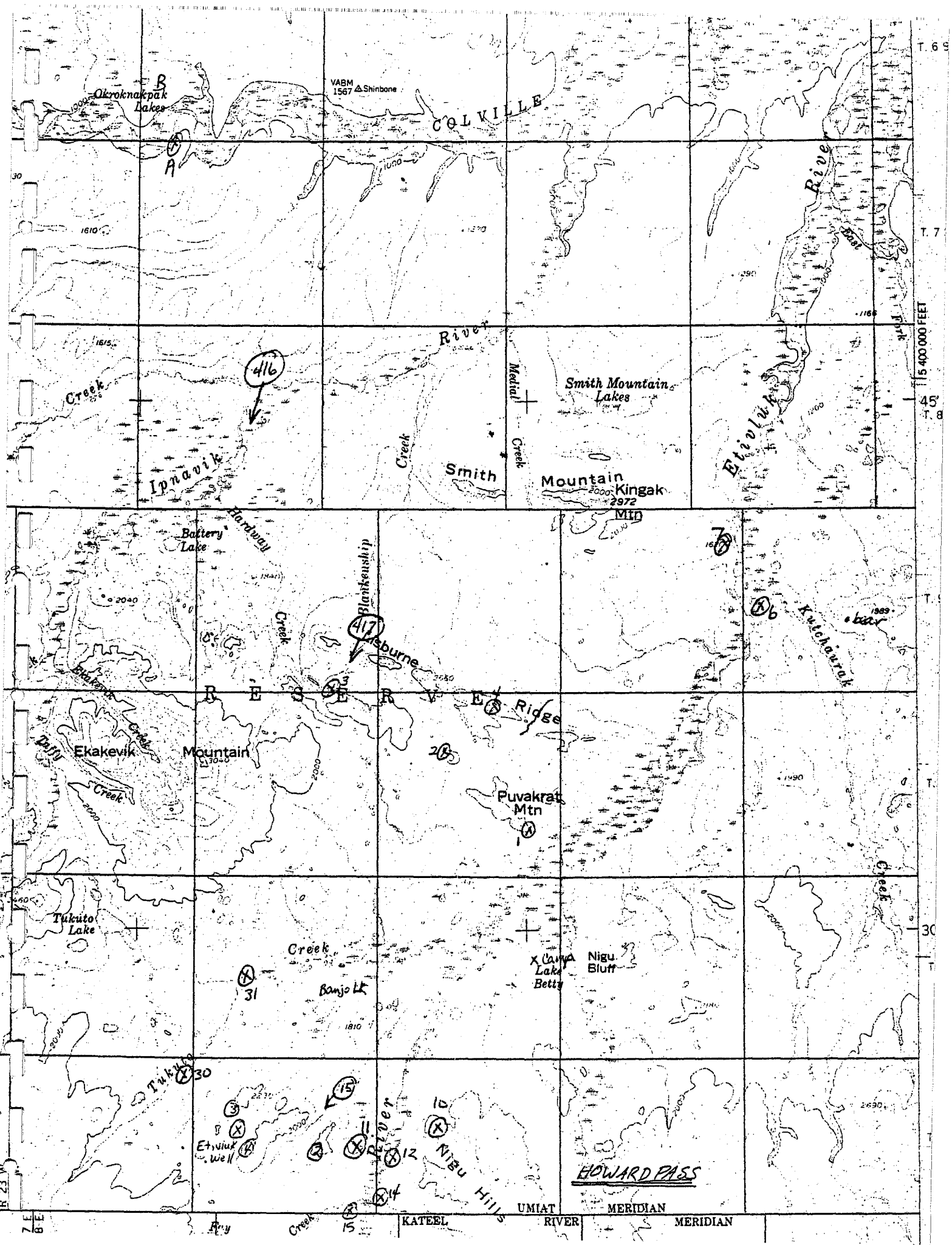
SLOPE to 30°

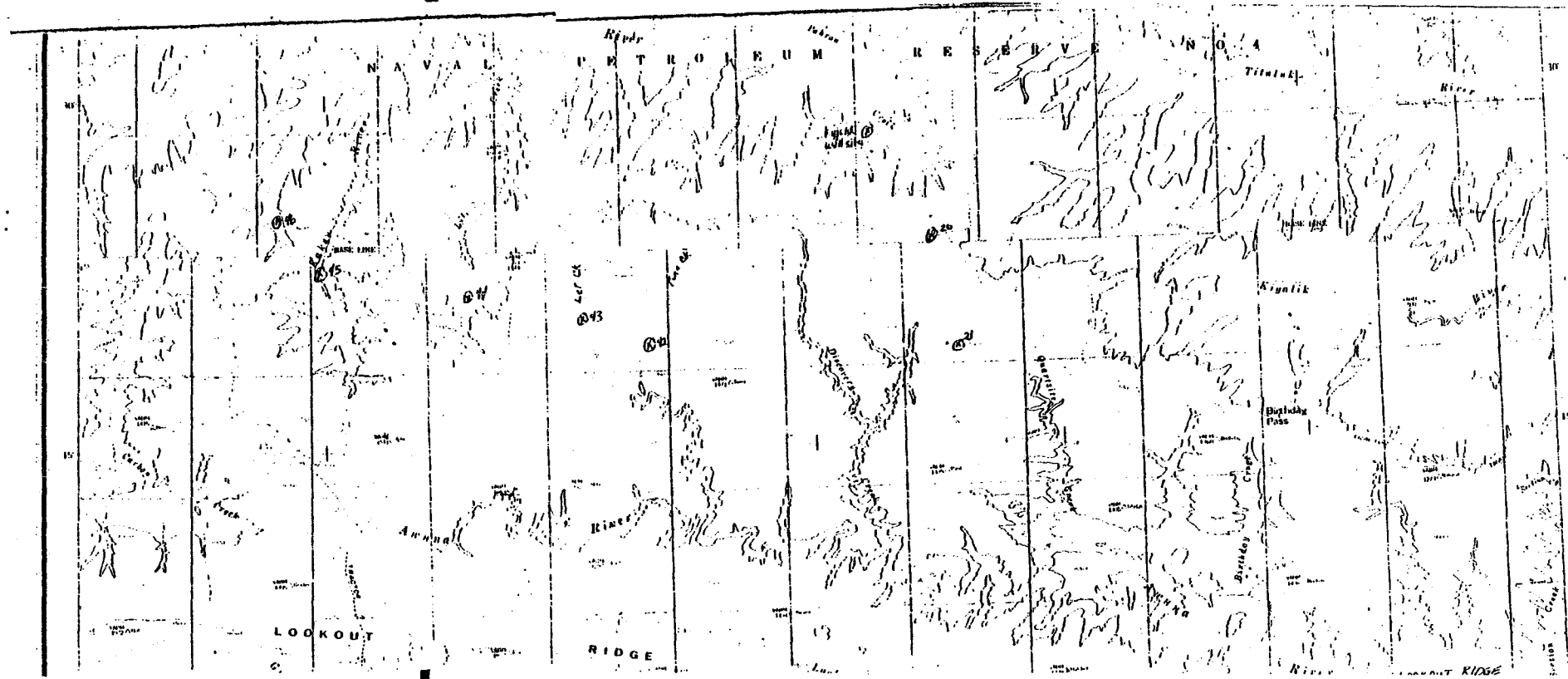
VEGETATION CLASS talus slope

PHOTOS K II Roll R
#3-13

Snow buntings

Raptor Factor: ST III







UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

National Petroleum Reserve in Alaska
2525 'C' Street - Suite 400
Anchorage, Alaska 99503

SANTOBA
RECEIVED
BUREAU OF LAND MANAGEMENT

1979 SEP 13 AM 10:00

DISTRICT OFFICE
FAIRBANKS, ALASKA

ENV/EA/g
MCB:kw
7 Sept 78

MEMORANDUM

To : State Director, Bureau of Land Management,
Anchorage, Alaska

From: Chief of Operations - ONPRA, Anchorage

Subj: Joint Draft Environmental Assessments

ICE
ASKA
10:00
GEMINI

The Chief, ONPRA, has been in travel status during much of the period since your 9 August memorandum addressed to him was received in this office. However, since this office also received a copy we are taking the liberty of providing an interim response.

It is well recognized and has been a source of concern to this office that some of the environmental assessments did not always precede on-the-ground work for all components of the approved Annual Plan of Operations covering oil and gas exploration on the NPRA during the past season. It also is agreed that where minor departures from the concepts included in the Annual Plan of Operations and designed to protect the environment, sensitive wildlife areas, and subsistence uses occurred, such departures were coordinated between our offices and did not adversely affect the environment beyond those unavoidable impacts identified in the Annual Plan. In some instances the minor departures even reduced the degree of the anticipated unavoidable impacts therein addressed.

This office does not, however, share your apparent confidence that quote, "now that both offices are staffed," the problem of completing the EAs in a timely manner has been solved. In fact, in the overall, it would appear that collectively we are about in the same position as we were last season. While this office made a significant improvement in the environmental staffing through the addition of two environmental specialists, one with 12 seasons field experience on the North Slope the other with 10 seasons, we no longer can anticipate the amount of TDY assignment of senior

Page two - 7 September 1978
State Director - BLM
Environmental Assessments

Arctic expertise from the Reston, Virginia office of the Geological Survey, in the writing of the EAs. The Operator also has one less environmental specialist available for assistance with EAs, and I personally cannot pirate as much time from the operational aspects of the program to write EAs as I did this past season. An item that probably further dilutes our collective effort in writing EAs is the somewhat rapid turnover in the BLM-NPRA Manager's staff. Thus, I am not confident, in the overall, that our collective resources for the preparation of EAs has much improved from last season.

In addition to both agencies having an almost impossible task because of the constricted time schedule for preparing the EAs, after collection of the environmental and engineering field data, we face the problem of separation between this office and the BLM-NPRA Manager's office when writing the EAs. All the drilling, construction, transportation, scheduling, and much of the environmental information are located here in Anchorage. The ongoing interfacing between these various disciplines is virtually all here in Anchorage. Thus, as we experienced last year, the actual writing of the EAs, or the Annual Plan of Operations, is dumped on those people located in the Anchorage office. While isolated paragraphs of environmental information are very helpful, they provide only a small portion of any EA and even then often become somewhat irrelevant in view of the concurrent development of the specific engineering plans and the requirement to integrate the information into an acceptable EA. An attempt was made by the BLM-NPRA Manager to provide a partial solution last year through the assignment, on a TDY basis, of two personnel to the NPRA office in Anchorage for a period of several weeks ending about mid to the latter part of October. One of those personnel was recalled early for work on a cooperative BLM/ERTS project. The other, who had been away from his family for several months and had responsibility for preparing a budget, returned to his duty station prior to the finalization of either the first of the EAs or of the 1977-78 Annual Plan of Operations.

This office is in complete agreement that the EAs, to be prepared jointly according to the MOU, should be completed prior to initiation of the operations. However, it will take more technical and writing assistance than was made available last year, and more than so far appears to be on the horizon for this year. It also must be kept in mind that the EAs must be very carefully prepared because, unlike the situation on many other projects, the information in these EAs is used for making check lists for compliance by the monitoring agencies.

M. C. B.



United States Department of the Interior

IN REPLY REFER TO

2361 (930)

BUREAU OF LAND MANAGEMENT

State Office

555 Cordova Street, Pouch 7-512

Anchorage, Alaska 99510

AUG 10 1978

AUG 9 1978

Memorandum

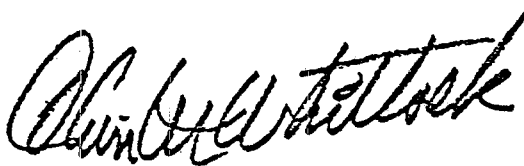
To: Chief, ONPR-A, U.S. Geological Survey, Anchorage, Alaska

From: State Director, Bureau of Land Management, Anchorage, Alaska

Subject: Joint Draft Environmental Assessments

It has come to our attention that final editing and signature of the jointly prepared draft environmental assessments (EA) did not always precede on-the-ground work for all components of the approved annual plan of operations covering oil and gas exploration on NPR-A. Although minor departures took place in some of the operations, we are not aware that there was a significant departure from the concepts included in the draft EA designed to protect the environment, sensitive wildlife areas, or to subsistence uses.

Now that both offices are staffed, it is appropriate that all EA's be completed prior to initiation of the operation. Please let us know if we can provide assistance so that there are no undue delays.



Acting

APPENDIX D

SUMMER (1978) ASSESSMENT OF PROPOSED NPR-A WELL SITES (ALTERNATES)

Two additional days were spent assessing lakes at alternate Tangent and Carbon Well site areas. This work was completed on September 28 and 29 during the final few days of freeze-up. The majority of lakes within NPR-A were frozen-over by September 29, 1978. Freeze-up precluded detailed assessment, but the following limnological information was collected.

TANGENT TEST WELL

The lakes for the Tangent site are shown in Figure 29. Figure 30 shows the bathymetry for Tangent Lake #1 that has been proposed as the water source.

#1 Proposed Water Source

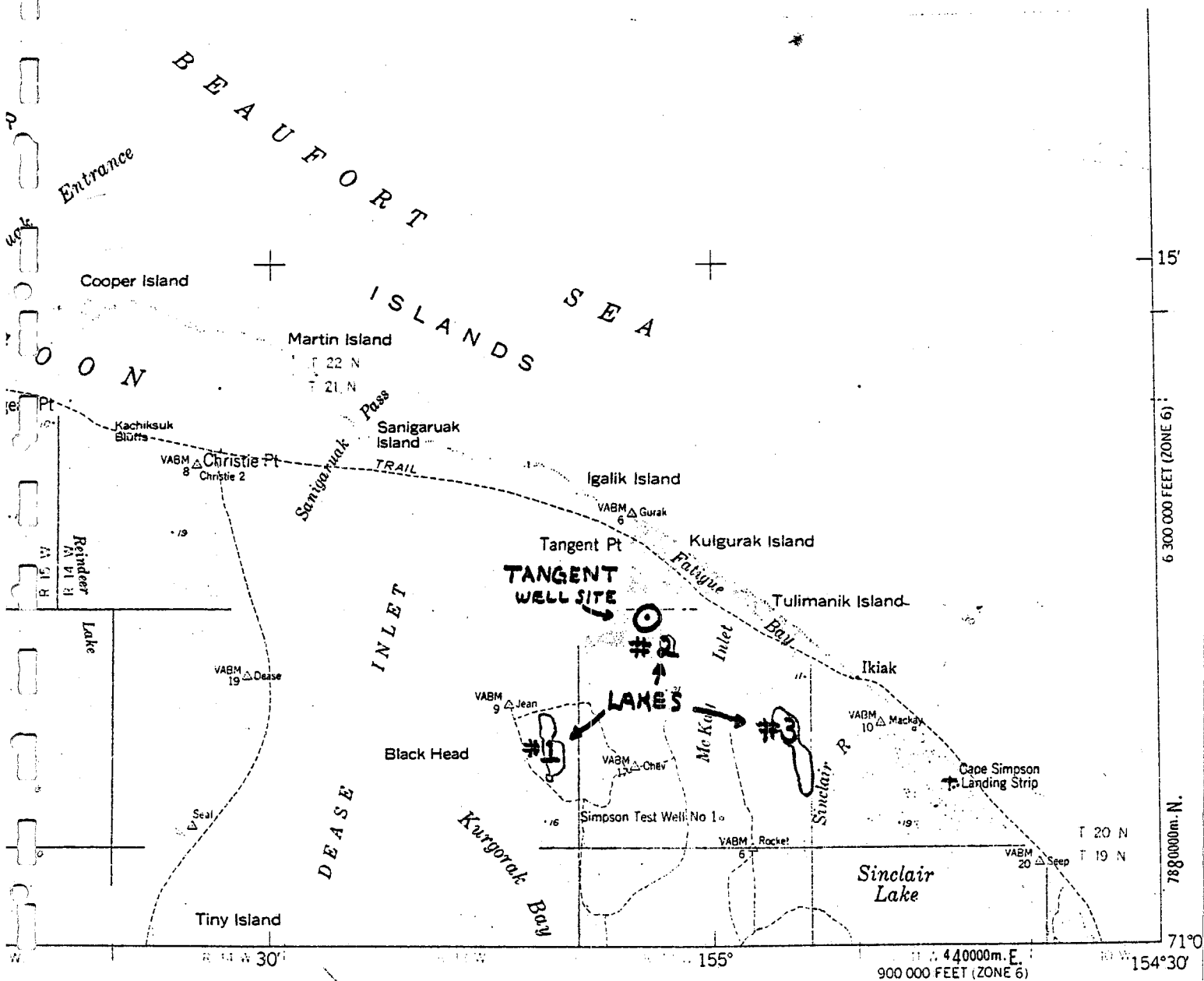
This lake's depth contours (Figure 30) have been estimated from fathometer transects that were completed under less than ideal conditions. Ice forming on the lake made continuous shore to shore transects impossible. The contours can be used to grossly estimate area of water within the basin as follows: surface (0 ft.); 434 acres; 2 feet, 394 acres; 4 feet, 195 acres; 6 feet, 0.51 acres; and 8 feet, 0 acres. The water has a low specific conductance of 234 micromhos/cm. This is a good fresh water source, limited only by water quantity at depth with a thick midwinter ice cover.

Due to ice, timing, and lack of lake depth no attempts were made to capture fish. This lake lacks sufficient basin and/or inlet/outlet depth to sustain a significant fishery population.

#2 Proposed Water Source

Bell Herring measured a depth of 1.5 feet in this lake. Specific conductance was 2,840 micromhos/cm on September 28, 1978. The surface area of this lake is 115 acres. This is obviously not a suitable water source.

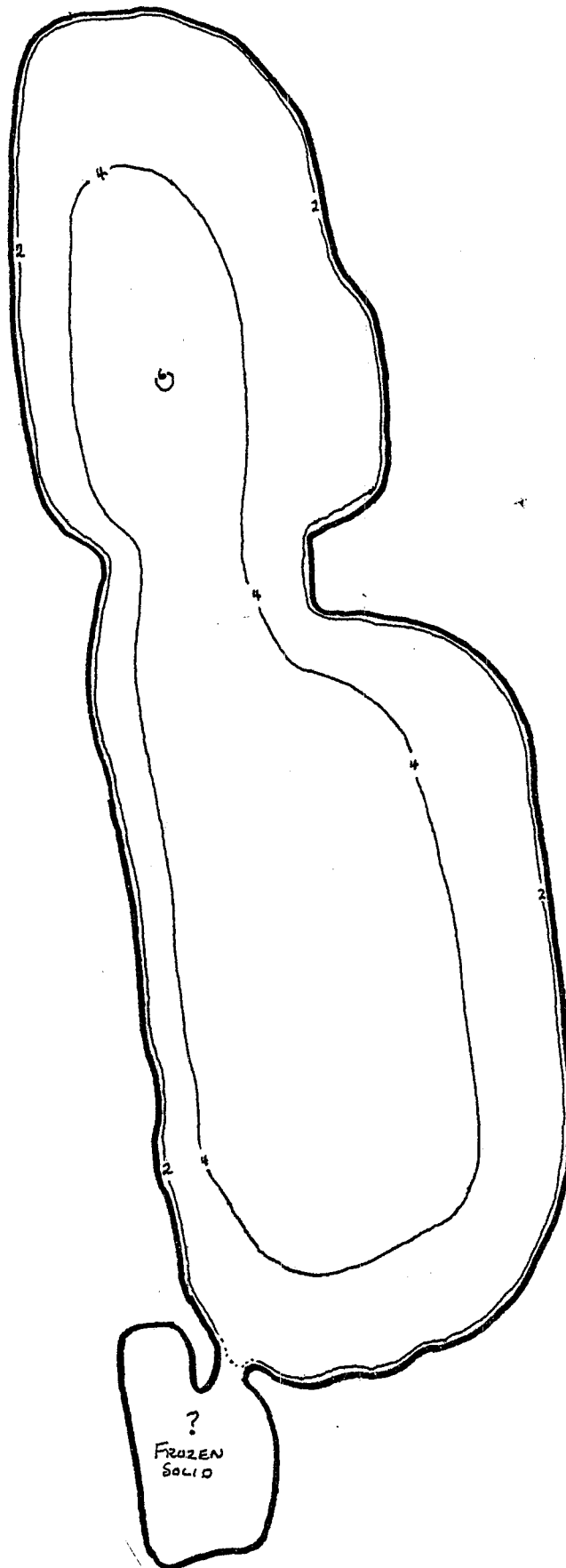
FIG. 29 LAKE IDENTITY: Tangent Well Site Vicinity



CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 30
LAKE IDENTITY: Tangent #1, water source

Lat. 71° 04.4' Long. 155° 11.0' Survey Date: Sept. 28, 1978 Scale: 1:12672



#3 Proposed Water Source

Bell Herring measured a depth of 2.0 feet in this lake. Specific conductance was 10,230 micromhos/cm on September 28, 1978. The surface area of this lake is 570 acres. This salty, shallow lake is not a suitable water source.

CARBON TEST WELL

#3 Proposed Water Source and Herc Strip

This lake (Figure 31) was frozen over when visited on September 29, 1978. This precluded our doing any fathometer transects or fish capture. The lake had little or no ice on September 27 when visited by another party. Bell Herring measured depths of 8 and 10 feet. A well channeled outlet connects this lake with a drainage flowing into the Utukok River. The outlet and lake depths measured by Bell Herring indicate potential for the existence of an over-wintering fish population in this lake. The surface area of this basin after subtracting the approximate area of the island in the southern portion of this lake is 690 acres. This lake has fresh water with a specific conductance of 125 micromhos/cm.

Bell Herring's measurement of 10 feet depth was in the southern portion of the lake basin to the west of the uncharted island. If a deep hole exists it may be very limited in size due to the existence of the island.

Additional fishery and bathymetry assessment needs to be completed in the 1979 summer season prior to utilizing this lake as a water source for the 1979-1980 proposed winter drilling season. No water removal should be necessary or allowed from this lake until the additional assessment is completed. An airstrip may be put on the lake this winter for pad construction, but care must be taken that snow removal is minimized such that winter ice thicknesses are not increased appreciably over a significant portion of the lake basin.

CONTOURS AT 2 FOOT INTERVALS
(estimated from fathometer transects)

FIG. 31 LAKE IDENTITY: Carbon 3

Lat. 69° 33.8' Long. 160° 54.8' Survey Date: Sept 29, 1978 Scale: 1:12672

